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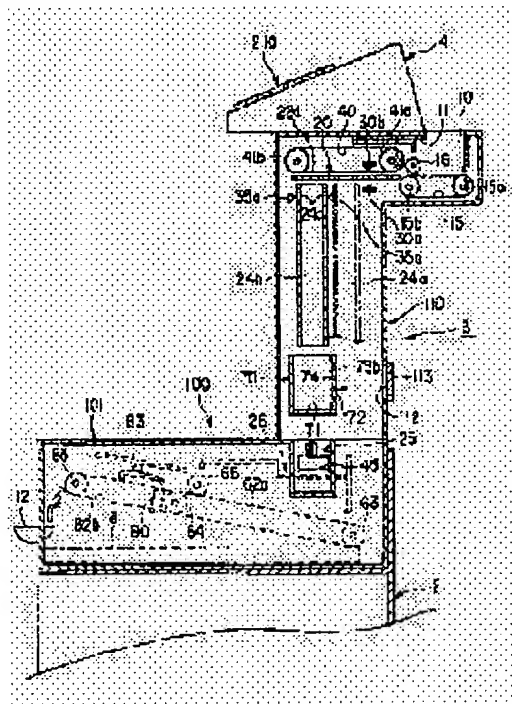|	
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(54) AUTOMATIC COIN PAYING-OUT MACHINE AND CHECK-OUT DEVICE USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a check-out device whose adjustment processing efficiency has been improved.

SOLUTION: This check-out device is provided with an automatic coin paying- out means 3 in which each kind of coin inputted from a coin input port 10 is carried by a carrying means (carrying belt 40), and identified by an identifying means 23, and the total sum of the coins is calculated, and charge is paid out by a paying-out means (ejecting belt 62) based on the charge sum, and a registration processor 4 in which the total deposited sum is calculated from a purchase total sum calculated based on commodity information inputted by an input means (keyboard 210) for inputting a deposited sum and the total sum of the inputted coins, and a charge sum is calculated based on the total deposited sum and the purchase total sum, and the charge sum is outputted to the automatic coin paying-out means 3. In this case, the charge sum related with coins among the charge sum is transmitted to the automatic coin paying-out means 3 so that the coin charge can be paid out from the automatic coin paying-out means 3 based on the charge sum.

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CLAIMS

[Claim(s)]
[Claim 1] Check-out equipment characterized by paying out change applied to a coin among change frames which consisted of registration processors characterized by providing the following, and were computed with said change calculation means with said coin automatic expenditure machine A main part case which consists of the case section which protruded on a side which counters [that an operator of a pedestal supported by susceptor and this pedestal is located in, and] towards the upper part the coin carry out counting in the coin input port in which the various coins which it was prepared in the upper part of said case section, and a customer threw in receive, a conveyance means convey the coin thrown in from this coin input port, the discernment means identify the classification of the coin conveyed with this conveyance means , and this coin that be identified -- counting -- the conveyance way equipped with the exclusion means eliminate the coin which a means and said discernment means identified , and which be identify noting that it be a regular coin The coin hold section which holds a coin of normal which was formed in said pedestal and has been conveyed from said conveyance way for every classification A coin total amount calculation means to compute the total amount of a normal coin which was thrown into said coin input port and identified with a discernment means, A coin total amount storing means to store the total amount computed with this coin total amount calculation means, A total amount output means to output the total amount of this coin total amount storing means, and a change information input means to input change information, An expenditure means which pays out a coin which change takes from the coin hold section based on change information inputted from this change information input means for every classification, A coin automatic expenditure machine constituted from a hold pan which holds a coin which it was prepared in a side in which an operator of said pedestal is located, and was paid out of said expenditure means, An input means to input various information [, such as goods information and a deposit frame from a customer,], such as a bar code and a price, A storing means to store a customer's purchase total amount computed based on goods information inputted from this input means, A total amount input means to input total amount information from a total amount output means of said coin automatic expenditure machine, A total amount storing means of ** to store the total amount of ** from a customer who totaled and asked for the coin total amount which was inputted from a deposit frame inputted from said input means, and said total amount input means, and was stored in a coin total amount storing means, A change calculation means to compute a change frame based on said total amount of **, and said purchase total amount, a change information output means to output change information computed with this change calculation means to a change information input means of a coin automatic expenditure machine
[Claim 2] Check-out equipment characterized by having made coin input port project to a side which counters with a field which counters with an operator of the case section, and a customer of the opposite side, and preparing it in invention according to claim 1.
[Claim 3] Check-out equipment characterized by computing the total amount of a normal coin thrown independently into coin input port of coin automatic-sorting expenditure equipment with registration processing made in invention according to claim 1 or 2 based on goods information inputted from an input means of a registration processor, and storing this total amount in a coin total amount storing means.
[Claim 4] Check-out equipment characterized by displaying the total amount of a coin which established a coin frame display means for customers, and was stored in this coin frame display means in claim 1 thru/or invention according to claim 3 at a coin total amount storing means.
[Claim 5] Check-out equipment characterized by preparing open door closing which will be in a condition which can be opened by open actuation of an operator corresponding to a stowage in a side wall of said case section while establishing a stowage which contains temporarily a coin conveyed on a lower stream of a river of a conveyance way on this conveyance way in claim 1 thru/or invention according to claim 4 in the case section.
[Claim 6] Check-out equipment which forms an exclusion means in the downstream of a discernment means formed in a conveyance way, and is characterized by making said exclusion pan discharge a coin identified when not regular with said discernment means in claim 1 thru/or invention according to claim 5 while preparing an exclusion pan in a side wall of the case section.
[Claim 7] Check-out equipment characterized by computing the total amount of ** based on a bill frame kept in claim 1 thru/or invention according to claim 6 according to an input of a bill frame kept for a customer from an input means, and the coin total amount stored in said coin total amount storing means.
[Claim 8] Check-out equipment characterized by arranging an optical reader in a field which counters with an operator of the case section in claim 1 thru/or invention according to claim 7.

[Claim 9] Check-out equipment characterized by arranging an optical reader in the case section through a vibroisolating material in invention according to claim 8.

[Claim 10] Check-out equipment characterized by preparing open lidding closed with a keying signal of an aperture and a registration end key in coin input port in claim 1 thru/or invention according to claim 7 based on goods information input of the beginning from an input means.

[Claim 11] A main part case which consists of the case section which protruded on a side which counters [that an operator of a pedestal supported by susceptor and this pedestal is located in, and] towards the upper part, Coin input port in which various coins which it was prepared in the upper part of said case section, and a customer threw in are received, A conveyance means to convey a coin thrown in from this coin input port, a discernment means to identify classification of a coin conveyed with this conveyance means, counting which carries out counting of this identified coin -- with a conveyance way equipped with an exclusion means to eliminate a coin which is not identified with a means and said discernment means noting that it is not a regular coin The coin hold section which holds a coin of normal which was formed in an inferior-surface-of-tongue side of said pedestal, and has been conveyed from said conveyance way for every classification, A decision means to determine a class and the number of a coin which change takes based on change information inputted from a change information input means, An expenditure means which pays out a coin for every classification which decision of this decision means was based and was contained by coin stowage for every classification, A hold pan which holds a coin which it was prepared in a side in which an operator of said pedestal is located, and was paid out of said expenditure means, A coin total amount calculation means to compute the total amount of a normal coin which was thrown into said coin input port and identified with a discernment means, A coin total amount storing means to store the total amount computed with this coin total amount calculation means, A coin automatic expenditure machine characterized by constituting from an output means to output the total amount of this coin total amount storing means to check-out equipment, and a change information input means to input change information from check-out equipment.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the check-out equipment which used the coin automatic expenditure machine and the coin automatic expenditure machine.
[0002]
[Description of the Prior Art] When it connects with the terminal unit of the electronic formula register or POS system currently used for the payment, i.e., the settlement of accounts etc., of goods of purchase price etc. which the customer purchased in the retail store or the supermarket etc. (only henceforth a register) and a coin is conventionally included in change, the coin automatic expenditure machine which pays out automatically the coin of this change (henceforth a change coin) is used.
[0003] Since there is no necessity for an activity that a customer purchases this coin automatic expenditure machine, and an operator, i.e., a cashier, counts a change coin at the time of payment, i.e., settlement of accounts, of the purchase price of wooden-clogs goods, while the time and effort which counts a coin is omissible Since settlement-of-accounts processing can be made quickly and exact in case many customers, such as the evening, come to the store, for example and a settlement-of-accounts location is crowded from being able to mitigate mental fatigue of a cashier and change paying out correctly, there is an advantage that the efficiency of settlement-of-accounts business can be raised.
[0004] However, although the conventional coin automatic expenditure machine has a big advantage in that mental fatigue of a cashier can be reduced while reducing the activity which counts a cashier's coin since change pays it out based on the coin change frame information of the change computed by the register as mentioned above at the time of settlement-of-accounts processing, it cannot solve the following factor which is reducing the efficiency at the time of settlement of accounts.
[0005] That is, the factor which settlement-of-accounts processing of one visitor takes long duration at the time of settlement of accounts Registration processing of the goods which the cashier operated the register and the customer purchased in the settlement-of-accounts location is carried out. When there is a portion paid in coins among the amount of money which the total
* NOTICES * □splayed on the drop and displayed on this drop by carrying out registration termination actuation (henceforth a bundle key stroke) After said total amount is displayed, in order that it may take a customer time amount to prepare the coin for paying in said coins, and to prepare this coin, this setup time is the big factor of settlement-of-accounts delay. That is, while a customer prepares a coin, a cashier has to interrupt settlement-of-accounts processing and it must be waiting for him, and settlement-of-accounts business will be only in this time amount. A cashier has to check the frame of the coin kept for the customer, and has become the factor from which the time amount for this check also delays settlement-of-accounts processing further again.
[0006] Thus, the big factor which delays settlement-of-accounts processing of one visitor at the time of settlement of accounts is for the check sake of the coin in which time amount was required for preparation, and the cashier received the coin of the purchase price which a customer pays as mentioned above from the customer to take time amount. However, the conventional coin automatic expenditure machine cannot cancel these factors.
[0007]
[Problem(s) to be Solved by the Invention] Although the big factor which delays settlement of accounts of one visitor at the time of settlement of accounts as mentioned above is for the check sake of the coin which preparation of the coin of the price which a customer pays took time amount to, and the cashier received from the customer to take time amount, although the conventional coin automatic expenditure machine can perform expenditure of coin change, it cannot cancel the above-mentioned delay factor.
[0008]
[Means for Solving the Problem] This invention is what was made in view of the above-mentioned situation. Invention according to claim 1 A main part case which consists of the case section which protruded on a side which counters [that an operator of a pedestal supported by susceptor and this pedestal is located in, and] towards the upper part, Coin input port in which various coins which it was prepared in the upper part of said case section, and a customer threw in are received, A conveyance means to convey a coin thrown in from this coin input port, a discernment means to identify classification of a coin conveyed with this conveyance means, a coin which carries out counting of this identified coin -- counting -- with a conveyance way equipped with an exclusion means to eliminate a coin which a means and said discernment means identified and which is not identified noting TECHNICAL FIELD□ regular coin The coin hold section which holds a coin of normal which was formed in said pedestal and ha conveyed from said conveyance way for every classification, A coin total amount calculation means to compute the total amount of a normal coin which was thrown into said coin input port and identified with a discernment means, A coin total amount storing

means to store the total amount computed with this coin total amount calculation means, A total amount output means to output the total amount of this coin total amount storing means, and a change information input means to input change information, An expenditure means which pays out a coin which change takes from the coin hold section based on change information inputted from this change information input means for every classification, A coin automatic expenditure machine constituted from a hold pan which holds a coin which it was prepared in a side in which an operator of said pedestal is located, and was paid out of said expenditure means, An input means to input various information [, such as goods information and a deposit frame from a customer,], such as a bar code and a price, A storing means to store a customer's purchase total amount computed based on goods information inputted from this input means, A total amount input means to input total amount information from a total amount output means of said coin automatic expenditure machine, A total amount storing means of ** to store the total amount of ** from a customer who totaled and asked for the coin total amount which was inputted from a deposit frame inputted from said input means, and said total amount input means, and was stored in a coin total amount storing means, A change calculation means to compute a change frame based on said total amount of **, and said purchase total amount, It consists of registration processors equipped with a change information output means to output change information computed with this change calculation means to a change information input means of a coin automatic expenditure machine. It considers as check-out equipment which paid out change applied to a coin among change frames computed with said change calculation means with said coin automatic expenditure machine.

[0009] Thus, when a customer is going to purchase constituted invention according to claim 1 including a coin at the time of settlement-of-accounts processing and it is going to carry out payment of price While being able to throw a possessed coin into coin input port beforehand and computing the total amount of this thrown-in coin by coin total amount calculation means, this total amount is stored in a coin total amount storing means. The total amount of this coin is totaled from a customer to a deposit frame inputted from an input means of a registration processor in a registration processor, and the total amount of ** is called for. By computing a class and the number of a required coin and paying out a coin required as change with the coin automatic expenditure machine 3, based on change information which purchased with this total amount of **, and was computed based on the total amount While being able to reduce time amount which settlement-of-accounts processing takes and being able to raise processing effectiveness, exact settlement of accounts can be performed, and it has an operation that reduction of mental fatigue resulting from counting an operator's, i.e., a cashier, change coin etc. can be aimed at.

[0010] Moreover, invention according to claim 2 is taken as check-out equipment which coin input port was made to project to a side which counters with a field which counters with an operator of the case section, and a customer of the opposite side, and prepared it in invention according to claim 1.

[0011] Thus, in invention according to claim 1, since coin input port was made to project to a side which counters with a field which counters with an operator of the case section, and a customer of the opposite side and invention according to claim 2 prepared it, in addition to an operation of invention according to claim 1, it has an operation that an injection of a customer's coin can be made easy.

[0012] Moreover, invention according to claim 3 computes the total amount of a normal coin thrown independently into coin input port of coin automatic-sorting expenditure equipment with registration processing made in invention according to claim 1 or 2 based on goods information inputted from an input means of a registration processor, and carries out as check-out equipment to which it was presupposed that this total amount is stored in a coin total amount storing means.

[0013] Thus, invention according to claim 3 is set to invention according to claim 1 or 2. It becomes independent of registration processing made based on goods information inputted from an input means of a registration processor. The total amount of a normal coin thrown into coin input port of coin automatic-sorting expenditure equipment is computed. Since this total amount is stored in a coin total amount storing means, to an operation of invention according to claim 1 or 2 in addition, calculation of the total amount of a coin thrown in from coin input port Since it is made independently with registration processing of an input of goods information which a customer purchased etc., a customer has an operation that time amount of settlement-of-accounts processing can be reduced further, from the ability of a coin to be thrown in during registration processing in input port.

[0014] Moreover, in claim 1 thru/or invention according to claim 3, invention according to claim 4 establishes a coin frame display means for customers, and is taken as check-out equipment carried out to displaying the total amount of a coin stored in this coin frame display means at a coin total amount storing means.

[0015] Thus, invention according to claim 4 is set to claim 1 thru/or invention according to claim 3. From having carried out to displaying the total amount of a coin which established a coin frame display means for customers, and was stored in this coin frame display means at a coin total amount storing means In addition to an operation, it has an operation that a customer can check the total amount of a coin which self threw in from coin input port, in claim 1 thru/or invention according to claim 3.

[0016] Moreover, in claim 1 thru/or invention according to claim 4, invention according to claim 5 uses open door closing which will be in a condition which can be opened by open actuation of an operator corresponding to a stowage as check-out equipment formed in a side wall of said case section while establishing a stowage which contains temporarily a coin conveyed on a lower stream of a river of a conveyance way on this conveyance way in the case section.

[0017] Thus, while invention according to claim 5 establishes a stowage which contains temporarily a coin conveyed on a lower stream of a river of a conveyance way on this conveyance way in claim 1 thru/or invention according to claim 4 in the case section From having prepared in a side wall of said case section, open door closing which will be in a condition which can be opened by open actuation of an operator corresponding to a stowage When the total amount of a coin which a customer threw in differs from a frame which self threw in in addition to an operation of claim 1 thru/or invention according to claim 4, it has an operation that a coin which opens open door closing and is contained by stowage can be checked. Moreover, since open door closing will be in a

condition which can be opened by an operator's, i.e., a cashier, switching operation, it has an operation that safety is securable.

[0018] Moreover, in claim 1 thru/or invention according to claim 5, invention according to claim 6 forms an exclusion means in the downstream of a discernment means formed in a conveyance way, and is taken as check-out equipment carried out to being identified if not regular, and making said exclusion pan discharge a coin with said discernment means while it prepares an exclusion pan in a side wall of the case section.

[0019] Thus, in invention of claim 1 thru/or claim 5, while invention according to claim 6 prepares an exclusion pan in a side wall of the case section From having carried out to forming an exclusion means in the downstream of a discernment means formed in a conveyance way, being identified by said discernment means, if not regular, and making said exclusion pan discharge a coin In addition to an operation of claim 1 thru/or invention according to claim 5, since a customer can check for customer itself that a coin which is not regular is mixing into a coin which carried out the self-injection, he has an operation that a trouble produced among operators can be prevented.

[0020] Moreover, invention according to claim 7 is taken as check-out equipment to which it was presupposed that the total amount of ** is computed based on a bill frame and the coin total amount stored in said coin total amount storing means according to an input of a bill frame kept for a customer from an input means in claim 1 thru/or invention according to claim 6.

[0021] Thus, invention according to claim 7 is set to claim 1 thru/or invention according to claim 6. From our having decided to compute the total amount of ** based on a bill frame kept according to an input of a bill frame kept for a customer from an input means, and the coin total amount stored in said coin total amount storing means Since it is computed according to an input of a bill frame with which an operator kept the total amount of ** for a customer in addition to an operation of claim 1 thru/or invention according to claim 6, it has an operation that the calculation can be made easy.

[0022] Moreover, invention according to claim 8 is taken as check-out equipment which arranged an optical reader in a field which counters with an operator of the case section in claim 1 thru/or invention according to claim 7.

[0023] Thus, in claim 1 thru/or invention according to claim 7, since it arranged an optical reader in a field which counters with an operator of the case section, invention according to claim 8 has an operation that register operation of goods information is easy, in addition to an operation of claim 1 thru/or invention according to claim 7, while being able to make check-out equipment small.

[0024] Moreover, invention according to claim 9 is taken as check-out equipment which arranged an optical reader in the case section through a vibroisolating material in invention according to claim 8.

[0025] Thus, in invention according to claim 8, since invention according to claim 9 arranged an optical reader in the case section through a vibroisolating material, it can prevent that vibration of a coin automatic expenditure machine produced working is transmitted to an optical reader in addition to an operation of invention according to claim 8, and has from things an operation that generating of failure resulting from vibration etc. can be prevented.

[0026] Moreover, invention according to claim 10 is taken as check-out equipment which prepared open lidding closed with a keying signal of an aperture and a registration end key based on goods information input of the beginning from an input means in coin input port in claim 1 thru/or invention according to claim 8.

[0027] Thus, invention according to claim 10 is set to claim 1 thru/or invention according to claim 8. It is based on goods information input of the beginning from an input means in coin input port. An aperture, Since open lidding closed with a keying signal of a registration end key was prepared, to an operation of claim 1 thru/or invention according to claim 8 In addition, since coin input port is lidded by open lidding except from initiation of registration processing of a customer before registration termination, It has an operation that an injection of a foreign matter to coin input port with a mischief etc. can be prevented.

[0028] Moreover, a main part case which consists of the case section which protruded on a side countered [that an operator of a pedestal by which invention according to claim 11 is supported by susceptor, and this pedestal is located in and] towards the upper part, Coin input port in which various coins which it was prepared in the upper part of said case section, and a customer threw in are received, A conveyance means to convey a coin thrown in from this coin input port, a discernment means to identify classification of a coin conveyed with this conveyance means, counting which carries out counting of this identified coin -- with a conveyance way equipped with an exclusion means to eliminate a coin which is not identified with a means and said discernment means noting that it is not a regular coin The coin hold section which holds a coin of normal which was formed in an inferior-surface-of-tongue side of said pedestal, and has been conveyed from said conveyance way for every classification, A decision means to determine a class and the number of a coin which change takes based on change information inputted from a change information input means, An expenditure means which pays out a coin for every classification which decision of this decision means was based and was contained by coin stowage for every classification, A hold pan which holds a coin which it was prepared in a side in which an operator of said pedestal is located, and was paid out of said expenditure means, A coin total amount calculation means to compute the total amount of a normal coin which was thrown into said coin input port and identified with a discernment means, A coin total amount storing means to store the total amount computed with this coin total amount calculation means, It considers as a coin automatic expenditure machine constituted from an output means to output the total amount of this coin total amount storing means to check-out equipment, and a change information input means to input change information from check-out equipment.

[0029] Invention according to claim 11 in thus, the upper part of said case section of a main part case which consists of the case section which protruded on a side which counters [that an operator of a pedestal supported by susceptor and this pedestal is located in, and] towards the upper part Coin input port in which various coins which a customer threw in are received, a conveyance means to convey a coin thrown in from this coin input port, A discernment means to identify whether a coin conveyed with this conveyance means is a coin of normal, The coin hold section which holds a coin of normal which prepared a conveyance

way equipped with an exclusion means which was judged not to be regular with this discernment means, and which carries out coin exclusion, and has been conveyed by said pedestal from said conveyance way for every classification, Since it considered as a vertical mold while making a coin automatic expenditure machine small, since the expenditure section which pays out a coin for every classification, and a hold pan which holds a coin which paid out of this expenditure section were prepared, it has an operation that an installation space can be made small.

[0030]
[Embodiment of the Invention] Below, the gestalt of the operation of check-out equipment which used the coin automatic expenditure machine (only henceforth a coin expenditure machine) and this coin expenditure machine of this invention is explained based on drawing 1 thru/or drawing 13 .

[0031] Drawing 1 is the perspective diagram seen from the side (henceforth an operator side) in which it is located, the operator, i.e., the cashier, of check-out equipment who used the coin expenditure machine, and drawing 2 is the perspective diagram which saw the part from the side (henceforth a customer side) in which the opposite side, i.e., a customer, is located a cashier side.

[0032] As shown in drawing 1 , check-out equipment 1 consists of susceptor 2, a coin expenditure machine 3, a registration processor 4, a bill accounts machine 5, etc.

[0033] Stowage 2a and stowage 2b which said susceptor 2 is formed in the shape of [so-called] a desk, is formed in the upper surface section at a concave, and carry out receipt installation of said coin expenditure machine 3 and the bill accounts machine 5 are prepared, and an operator side is opened wide, and the lower part section has become storage space 2c which contains a supply etc. Moreover, the installation base 7 which the installation bases 6 and 7 in which the receipt cage into which goods or goods was put, respectively is laid are arranged, respectively, and has been arranged on right-hand side in drawing 1 lays non-registered goods in the right-and-left both sides of said susceptor 2, and the left-hand side installation base 6 lays the registered goods with which registration processing was carried out in them.

[0034] Next, said coin expenditure machine 3 consists of the conveyance way 20 which was prepared in the main part case 100 which consists of the case section 110 which the upper part was made to project and was prepared from the upper surface of the operator, i.e., cashier, side (an operator is also called cashier below) of the pedestal 101 formed in box-like [comparatively flat], and this pedestal 101, and the opposite side, and this main part case 100 and which is mentioned later, coin hold container 60a or 60f, a

[0035] and this coin expenditure machine 3 said pedestal 101 in the condition of receipt installation being carried out at stowage 2a of said susceptor 2, and it being supported by susceptor 2, and having been supported and It becomes flat-tapped [the upper surface of the bill accounts machine 5 explained in full detail the upper surface and after receipt support is carried out similarly at stowage 2b] with the upper surface of said installation bases 6 and 7, and in case these upper surfaces carry out registration processing of goods, they can lay goods etc.

[0036] and said case section 110 -- an angle -- the coin input port (only henceforth input port) which is [in / it is formed pillar-shaped and / drawing 1] said some of coin expenditure machines 3 in right-hand side -- moreover, the registration processor 4 explained in full detail behind is arranged in left-hand side.

[0037] Below, the coin expenditure machine 3 is explained. Said input port 10 is established in this coin expenditure machine 3, and this input port 10 carries out the opening of the upper part to the part of said projected end side upper part of the box-like section 111 which that part was made to project from the side by the side of the customer of said case section 110, and formed it, and is formed in it while it forms the left-hand side upper part of said case section 110 in the shape of a rectangular parallelepiped. And said input port 10 can make small the size of the longitudinal direction in the longitudinal direction, i.e., drawing 1 , of the coin expenditure machine 3 while an injection of a customer's coin becomes easy, since it is made to project from the side by the side of the customer of the case section 110 and is prepared.

[0038] Moreover, as the above is shown in the interior of the box-like section 111 at drawing 3 thru/or drawing 5 , the conveyance way 20 is formed. And as shown in drawing, suspension is carried out to driving roller 15a and follower roller 15b, the conveyance belt 15 is formed in the pars basilaris ossis occipitalis of said input port 10, and this conveyance belt 15 sends out the coin K thrown into said conveyance way 20 explained in full detail to the after-mentioned from said input port 10. The alignment roller 16 is formed in input port 10 at the hand-of-cut downstream of said conveyance belt 15. Moreover, this alignment roller 16 While preparing the gap which passes one coin between the conveyance belts 15 and being arranged Even if it drives so that the conveyance direction of the conveyance belt 15 may be rotated to hard flow, and two or more coins are thrown into coincidence by this from input port 10, each coin K aligns further at a single tier, and is sent out to the sequential conveyance way 20.

[0039] Moreover, light emitting device 14a which countered mutually and has been arranged at the both sides of said input port 10 as shown in drawing 4 , 14a and photo detector 14b which receives the light from these light emitting devices 14a and 14a, If it consists of 14b, an injection detection means 14 to detect that the coin was thrown in is formed in input port 10 and it is detected that the coin was thrown in by this injection detection means 14 The first conveyance system R1 formed by the conveyance belt 15, the alignment roller 16, and the conveyance belt 40 of the conveyance way 20 mentioned later drives.

[0040] Moreover, as shown in drawing 1 thru/or drawing 3 , the open lidding 11 of a slide type is formed in said input port 10. This open lidding 11 is what operates with the closing motion means which consists of an electromagnet which is not illustrated. This closing motion means synchronizes with the signal for carrying out registration of the beginning from the keyboard 210 which is the input means of the registration processor 4 mentioned later, or a scanner 220, i.e., the input signal of the first goods information. The open lidding 11 An aperture, It operates so that it may close synchronizing with the keying signal produced by actuation of the bundle key 214 which is a registration end key. That is, said open lidding 11 is closed to initiation and

coincidence of registration processing of an operator at an aperture, and termination and coincidence. When registration processing is not carried out by this, the injection of a foreign matter etc. can be prevented with a mischief etc.

[0041] Below, the conveyance way 20 established in the downstream of said input port 10 is explained.

[0042] the coin which states each coin K which the conveyance side 22 of this conveyance way 20 is formed in the flat side, and a discernment means 23 to identify the classification of Coin K is arranged at the upstream of this conveyance way 20, and was detected with this discernment means 23 -- counting -- counting is carried out with a means 35. and the various exceptions of the coin detected with said discernment means 23 and said coin -- counting -- the total amount of a coin is computed by the coin total amount calculation means (it is only called a coin frame calculation means) which consists of CPUs90 later mentioned from the number (henceforth number of sheets) of the coin for every various exceptions by which counting was carried out with the means 35.

[0043] Moreover, it is got blocked and an exclusion means 24 to eliminate the coin which is not a Shinsei coin as a result of being identified with said discernment means 23 and it was presupposed that it was not the coin of normal is formed in the downstream of said discernment means 23.

[0044] And said discernment means 23 is constituted by outer-diameter detection means 30 (refer to drawing 3) to identify, the diameter, i.e., the outer diameter, of a coin. Moreover, this appearance detection means 30 consists of photo detector 30b arranged in the upper part of light emitting device 30a arranged under the hole 22a, and hole 22a formed in said conveyance side 22, as shown in drawing 3 . Since the quantity of lights which quantity of light, i.e., photo detector, 30b which passes said hole 22a with the magnitude of the outer diameter of a coin receives differ, by the electrical output which changes with these quantity of lights, this appearance detection means 30 detects the outer diameter of a coin, and identifies classification.

[0045] That is, since the outer diameter of each coin changes altogether with each coins, detection, i.e., discernment, can do classification of a coin by detecting this outer diameter. in addition, the hole which detects that is, identifies the hole of the coin which has a hole like a quality-of-the-material detection means detect the quality of the material of a coin with the outer-diameter detection means 30 although there is no drawing example when it is going to ensure discernment further, although discernment of a coin is made by [said] detecting that the outer diameter of each coin carried out, a 5 yen coin, and a 50 yen coin -- it may make establish a discernment means

[0046] The discernment means is arranged. in addition, the gestalt of this operation -- the hole which identifies the hole of a coin as a discernment means 23 if it is and which is not a drawing example -- This hole discernment means consists of the light emitting devices and photo detectors of hole 22c (refer to drawing 4) prepared in the conveyance side 22 like the outer-diameter discernment means 30 which have been arranged up and down and which do not carry out a drawing example. Discernment of the existence of the hole of said coin is made by detecting the light which passes the hole of the coin conveyed by the photo detector.

[0047] and the process in which it is supplied from said input port 10, and a conveyance way 20 is conveyed -- a discernment means 23 and a coin -- counting -- the total amount of the coin computed by said coin frame calculation means with a means 35 based on the number by which counting was carried out is displayed on the coin frame drop H formed in the field by the side of the customer of said registration equipment 4 explained in full detail to the after-mentioned prepared in the upper part of said case section 110 as shown in drawing 2 . Thus, since the total amount of the coin which the customer threw in is displayed on the expensive frame drop H, a customer can check the thrown-in frame himself.

[0048] Moreover, said exclusion means 24 is constituted by the shutter S arranged by [as always carrying out a predetermined width-of-face protrusion] from the conveyance direction left-hand side at exclusion hole 22b in drawing 4 of exclusion hole 22b formed in the conveyance side 22. The coin which was eliminated from exclusion hole 22b and which is not regular is discharged by exclusion pan 12a prepared in the side of the side wall on the right-hand side of the case section 110 through free passage way 24a (refer to drawing 5) formed caudad along the interior of said case section 110. That is, when it was not the coin of normal and is identified by said outer-diameter discernment means 30 and hole discernment means 23, the above drops the coin which said projected portion was engrossed in right-hand side, and has been conveyed by the electromagnet which operates by control of exclusion means controller 95f (refer to drawing 9), and which is not illustrated from said exclusion hole 22b to exclusion pan 12a, and said shutter S makes it discharge.

[0049] Thus, when the coin which is not regular is mixing into the coin which the customer threw in, since it is fallen that is, discharged by said exclusion pan 12a, he can prevent a malfeasance beforehand while he can cancel the trouble produced among operators, since a customer can check himself that things other than a regular coin are mixing into the coin which self threw in.

[0050] Moreover, the coin which it is located in the lower stream of a river of said exclusion hole 22b of said conveyance side 22, and 22d of coin passage holes which pass the coin of normal is formed, and passed 22d of this coin passage hole It is contained by the stowage container 70 as a stowage which contains temporarily the coin later mentioned through free passage way 24b (refer to drawing 5 and drawing 6) prepared caudad along the interior of the case section 110.

[0051] Moreover, the suspension of the conveyance belt 40 as a conveyance means to convey the coin K (to refer to drawing 4) which was made to counter said conveyance way 20 with the conveyance side 22, was arranged in it, and was sent in from said input port 10 is carried out to driving roller 41a and follower roller 41b, and it is arranged in them. And it is conveyed the coin K which it rotated carrying out the pressure welding of this conveyance belt 40 to the upper surface of Coin K, and was sent into the conveyance way 20 by this sliding on the conveyance side 22 along datum level 21 (refer to drawing 4), and 22d of said coin passage holes is passed, and it is fallen and contained in said stowage container 70.

[0052] Moreover, as shown in drawing 2 and drawing 5 , through tube 24c which counters mutually is formed in the upper part section of the side wall which counters mutually [said free passage way 24b], and detection sensor 35a which consists of the light emitting device and photo detector which detect the thrown-in coin of normal is prepared in the outside of this through tube

24c. and this detection sensor 35a and the counter which is not a drawing example -- said coin -- counting -- the means 35 (refer to drawing 9) is constituted.

[0053] And said stowage container 70 is formed in box-like [which carried out the opening of the upper part] as shown in drawing 5 and drawing 6 , and if the bottom wall 71 rotates focusing on hinge 73a (refer to drawing 6), a pars basilaris ossis occipitalis is opened and a bottom wall 71 rotates, the coin temporarily contained inside will fall in the alignment sending-out section 25 mentioned later.

[0054] Moreover, the opening 72 is formed in the side wall by the side of the customer of said case section 110 of said stowage container 70, and this opening 72 can be opened now and closed with the lid 74 which rotates the upper part section by hinge 73b. Moreover, as shown in the side wall by the side of the customer of said case section 110 which counters this lid 70 at drawing 2 and drawing 5 , the opening 112 is formed, and this opening 112 is opened and closed by the open door closing 113 attached rotatable by the hinge which is not illustrated. The lock 114 which an operator can lock or unlock using a key as shown in drawing 2 is attached in the side and the opposite side in which the hinge which this open door closing 113 does not illustrate was formed.

[0055] And by opening said open door closing 113 and subsequently opening the lid 74 of said stowage container 70, the coin temporarily contained by the stowage container 70 is taken out, and the denomination, amount of money, etc. can be checked now. That is, when the proposal of the purport in which a customer supplies from input port 10, the coin frame computed by said coin frame drop H with said coin frame calculation means is displayed, and the amount of money differs from the coin frame recognized that the customer supplied occurs, It is what can check now the amount of money of the coin which an operator unlocks said lock, opens the open door closing 113 and a lid 74, and is contained by the hold container 70. By this While being able to cancel that is, prevent the trouble produced among customers, maintenance of a confidential relation with a customer can be performed.

[0056] Moreover, it will open, if time amount progress is carried out, and the bottom wall 71 of said stowage container 70 falls in said alignment sending-out section 25 to which the coin which is predetermined, and which was contained when this bottom wall 71 opened is aligned, and sends out a coin, after a coin is contained.

[0057] This alignment sending-out section 25 is formed in the pedestal 101 contained by the stowage 102 established in the inferior-surface-of-tongue side of said rest 100, as shown in drawing 6 , and that configuration has the same composition as said input port 10 and abbreviation. That is, as shown in that pars basilaris ossis occipitalis at drawing 6 , suspension is carried out to driving roller 44a and follower roller 44b, the conveyance belt 44 is formed, and this conveyance belt 44 sends out said coin which fell to the sorting conveyance way 26 mentioned later. Moreover, while the alignment roller 45 is formed in the hand-of-cut downstream of the conveyance belt 44 of the alignment sending-out section 25, and this alignment roller 45 prepares the gap which passes one coin between the conveyance belts 44 and being arranged Even if it drives so that the conveyance direction of the conveyance belt 44 may be rotated to hard flow, and two or more coins fall in the alignment sending-out section 25 by this at coincidence, each coin aligns further at a single tier, and is sent out to the sequential sorting conveyance way 26.

[0058] Moreover, acceptance sensor 25e (refer to drawing 9 (drawing 6 un-illustrating [drawing 5 ,])) which detects the coin which falls from the hold container 70 is prepared in the alignment sending-out section 25.

[0059] Below, said sorting conveyance way 26 is explained.

[0060] This sorting conveyance way 26 is formed in the pedestal 101 contained by the stowage 102 established in the inferior-surface-of-tongue side of said rest 100 with coin hold section 60a mentioned later thru/or 60 etc.f, etc. And the conveyance side 27 of this sorting conveyance way 26 is formed in the flat side as shown in drawing 8 , and the coin sorting means 50 is formed in this sorting conveyance way 26.

[0061] This coin sorting means 50 is constituted by sorting hole 51a which drops said coin hold section 60a explained in full detail after passing a coin with a small outer diameter sequentially from right-hand side in drawing 7 and forming down conveyance side 27 thru/or 60f thru/or 51f.

[0062] That is, in drawing 7 , sorting hole 51a by the side of most the right-hand side 25, i.e., the alignment sending-out section, is the sorting hole of a 1 yen coin with the smallest outer diameter. The following sorting hole 51b is the sorting hole of a 50 yen coin with a larger outer diameter than a 1 yen coin. Sorting hole 51c is the sorting hole of a 5 yen coin with a larger outer diameter than a 50 yen coin similarly. 51d of sorting holes is the sorting hole of a 100 yen coin with a larger outer diameter than a 5 yen coin. Sorting hole 51e is the sorting hole of a 10 yen coin with a larger outer diameter than a 100 yen coin, and 51f of sorting holes located most in left-hand side is the sorting hole of a coin 10 yen 500 yen with a larger outer diameter than a coin.

[0063] Moreover, the suspension of the conveyance belt 47 which conveys the coin 5 sent in with said conveyance belt 44 which was made to counter said sorting conveyance way 26 with the conveyance side 27, and was arranged in it is carried out to driving roller 48a and follower roller 48b, and it is arranged in them. And the coin which it rotated carrying out the pressure welding of this conveyance belt 47 to the upper surface of a coin, and was sent into the sorting conveyance way 26 by this is conveyed, sliding on a **** 27 top along with datum-level 27a.

[0064] And when each coin is conveyed in the process of conveyance in the location of the sorting hole which sorts out this coin, it holds in said coin hold section 60to which it falls caudad from this sorting hole, and this coin is held a thru/or 60f.

[0065] In addition, the conveyance belt 44 of said alignment sending-out section 25, the alignment roller 45, and the conveyance belt 47 of the sorting conveyance way 26 constitute the second conveyance system R2.

[0066] Moreover, the hold pan 12 which carried out the opening of the upper part which holds the various coins paid out by second expenditure belt 62b which constitutes the expenditure belt 62 mentioned later in the anterior part of said case 3a is formed. The various coins paid out of expenditure opening 13a prepared in the downstream of said expenditure belt 62b

corresponding to each coin hold section 60a thru/or 60f thru/or 13f are held in this hold pan 12.

[0067] Below, the configuration which pays out said coin hold section 60a thru/or 60f, and a coin is explained. In addition, since the configuration which pays out coin hold section 60a thru/or 60f, and a coin is the same structure, only the portion relevant to 60f of coin hold sections of them is explained, and others omit the explanation.

[0068] As shown in drawing 8 , the expenditure belt 62 which constitutes an expenditure means is arranged in the pars basilaris ossis occipitalis of 60f of coin hold sections, and this expenditure belt 62 consists of the first short conveyance belt 62a and the second long expenditure belt 62b. And while the suspension of the first expenditure belt 62a is carried out to a driving roller 63 and the follower roller 64, the anterior part has extended outside from 60f of coin hold sections. Moreover, the suspension of the second expenditure belt 62b is carried out to said driving roller 63 and the follower roller 65 formed near the 13f of the expenditure openings.

[0069] And this second expenditure belt 62b extended outside from 60f of coin hold sections, and has extended even to 13f of expenditure openings, and said first expenditure belt 62a and second expenditure belt 62b62, i.e., an expenditure belt, rotate in the direction which turns a coin to 13f of expenditure openings, and conveys it.

[0070] Moreover, said first expenditure belt 62a and second expenditure belt 62b which are the expenditure belt 62 are countered, the alignment roller 66 is formed in the outlet of 60f of coin hold sections, this alignment roller 66 rotates to the hand of cut and hard flow of the expenditure belt 62, and in case it is conveyed towards 13f of expenditure openings with the expenditure belt 62, it functions as aligning a coin further at a single tier.

[0071] Moreover, while countering with second expenditure belt 62b and using shaft 81a as the supporting point by actuation of an electromagnet 80, the specification-part material 81 which suspends migration of the coin conveyed by stop piece 81b is TECHNICAL FIELD□downstream of second expenditure belt 62b, i.e., the part near this side of 13f of expenditure openings, by · point. In addition, said electromagnet 80 and specification-part material 81 constitute the regulation means 83, and this regulation means 83 operates by control of regulation means controller 95c which is controlled by CPU90 (refer to drawing 9) and which is mentioned later.

[0072] And when the coin of the predetermined number of sheets based on the change information from the registration processor 4 explained in full detail behind pays out said electromagnet 80, it is controlled by said regulation means controller 95c, operates said specification-part material 81, and stops expenditure of the coin beyond said predetermined number of sheets.

[0073] And the coin K in which even 13f even of expenditure openings was conveyed by second expenditure belt 62b of the expenditure belts 62 is fall, i.e., the thing to pay out, in said hold pan 12.

[0074] moreover, the counter which the detection sensor 84 which detects the coin to pay out is formed near said regulation means 83, and is not a drawing example with this detection sensor 84 -- expenditure -- counting -- means 85a thru/or 85f are constituted.

[0075] Moreover, as shown in drawing 5 , drawing 6 , and drawing 8 , the container 8 for recycling which collects each coins contained by coin hold section 60a thru/or 60f is formed in the lower part of a pedestal 101, i.e., said coin hold section 60a, thru/or the 60f bottom withdrawal. And by making recovery of the coin to this container 8 for recycling into the location which shows the guide plate 17 shown in drawing 8 with a two-dot chain line focusing on shaft 17a, and driving said expenditure belt 62 in this condition The coin paid out of expenditure opening 13a thru/or 13f is guided at the rear face of said guide plate 17, and falls in the container 8 for recycling, and each coins contained by coin hold section 60a thru/or 60f by this can be collected now in said container 8 for recycling.

[0076] Below, the main control configurations of the coin expenditure machine 3 are explained based on control-block drawing of drawing 9 .

[0077] As shown in drawing, RAM (random access memory)93 which stores, ROM (read only memory)92 and the various information, i.e., the data, which stores various control programs through a bus line 91, is connected to CPU (central processing unit)90 which carried out the internal organs of the arithmetic circuit, and it shines, and said CPU90 performs processing of various kinds of control, various operations, etc. according to various kinds of control programs stored in said ROM92.

TECHNICAL FIELD□ it is shown in drawing -- as -- a bus line 91 -- I/O Port 94a -- minding -- the discernment means 23 and I/(Port 94b -- minding -- the injection detection means 14 and I/O Port 94c -- minding -- a coin -- counting -- means 35, 94d of I/O Ports -- minding -- a time check -- a means 97 -- I/O Port 94e -- minding -- accepting -- sensor 25e -- 94f of I/O Ports -- minding -- expenditure -- counting -- means 85a thru/or 85f are connected. Moreover, drop controller 95a which controls the coin frame drop H to a bus line 91, Expenditure means controller 95b which controls an expenditure means (expenditure belt 62), Regulation means controller 95c which controls the regulation means 83, first conveyance system controller 95d which controls the first conveyance system R1, Second conveyance system controller 95e which controls the second conveyance system R2, exclusion means controller 95f which controls the exclusion means 24, Transmission I/F96 as a change information input means which accepts the change information from an output means to output to the registration processor 4 which mentions coin total amount information later, and the registration processor 4 is connected.

[0079] And change information storage area 93b as a change information storing means which stores in said RAM93 the change frame to pay, the change information, i.e., the coin, transmitted from total amount storage area 93a which is a coin total amount storing means, and the registration processor 4 mentioned later, is prepared.

[0080] Below, actuation of the coin expenditure machine 3 is explained.

[0081] A customer supplies to said input port 10 which said open lidding 11 is opening, while the possessed coin is beforehand got blocked in the case of settlement of accounts of the purchase price after shopping and the cashier is doing register operation at it, in [which pays a part of price to it in coins when change, i.e., a coin, is required, or when many coins are possessed in the total

amount] carrying out a thing request.

[0082] If it will detect that said injection detection means 14 was supplied if a coin is thrown in, and this detection is carried out, CPU90 operates the first conveyance system R1 15, i.e., conveyance belt, alignment roller 16, and conveyance belt 44 to said first conveyance system controller 95d, will align further at a single tier and will convey the thrown-in various coins K towards a stowage 70 temporarily [said] through the conveyance way 20.

[0083] And while the classification of a coin is identified with said discernment means 23 by the process in which the conveyance way 20 is conveyed Counting is carried out with a means 35. the coin of the normal which passed 22d of coin passage holes -- TECHNICAL FIELD□nting -- The total amount of the coin thrown in based on the result is computed by CPU90, i.e., a coin fram calculation means. the classification of this coin, and counting -- The total amount which this total amount was stored in total amount storage area 93a prepared in said RAM93, and was stored in this total amount storage area 93a is displayed on said coin frame drop H. Moreover, said total amount is sent to the registration processor 4 through transmission I/F96.

[0084] Moreover, the coin which is not discriminable with said discernment means 23 is eliminated by said exclusion means 24, and is discharged by discharge pan 12a noting that it is not a coin of normal. Prevention can perform that the fake coin which is not regular is used by this.

[0085] And said each identified coin is contained from 22d of said coin passage holes by the stowage container 70 which is a stowage temporarily [said]. After fall of a coin is judged that all the coins thrown in from termination 10, i.e., input port, were contained by the stowage container 70 by said detection sensor 35a prepared near the lower part of 22d of said coin passage holes of said free passage way 24b predetermined time -- said time check -- if it clocks with a means 97, the coin in which the bottom wall 71 was contained by the aperture and the stowage container 70 will fall in the alignment sending-out section 25.

[0086] This fall is detected by acceptance sensor 25e, and CPU90 operates the second conveyance system R2 44, i.e., conveyance belt, alignment roller 45, and conveyance belt 47 based on the detection signal of this acceptance sensor 25e.

[0087] With the alignment roller 45, each coin in the alignment sending-out section 25 aligns further at a single tier, is sent out to the sequential sorting conveyance way 26 by this, is sorted out for every classification, and is contained at coin hold section 60a thru/or the predetermined coin hold section of the 60f.

[0088] And if change information, i.e., a change frame, is received through transmission I/F96 from the registration processing section 4 so that it may mention later This change frame is stored in change information storage area 93b, and it is based on this change frame. CPU90 Determine, the classification and the number of sheets, i.e., the change information, on a coin which constitutes this change frame, and this change information is stored in said change information storage area 93b. The expenditure belt 62 which is an expenditure means of a coin stowage by which the coin of the class which said change takes based on this change information is contained is operated, and a coin is paid out to the hold pan 12 through expenditure opening 13a thru/or * NOT

[0089] In addition, CPU90 constitutes a decision means to determine, the classification and the number of sheets, i.e., the number, of a coin of change.

[0090] moreover, the process conveyed by second expenditure belt 62b of said expenditure belt 62 -- a coin -- expenditure -- counting -- if counting is carried out by means 85a thru/or 85f and counting of the predetermined number of sheets is carried out, CPU90 will stop expenditure from expenditure opening 13a of the coin which said regulation means 83 is operated and is conveyed thru/or 13f. The change of a predetermined coin pays out the hold pan 12, and by it, an operator, i.e., a cashier, hands a customer with the bill as change paid out of the bill accounts machine 5 mentioned later, when the bill is contained in the coin held in this hold pan 12, and change by this.

[0091] In addition, the classification and the number of sheets of said coin are determined that the number of sheets of the coin to pay out will become min. That is, when the frame of change is 570 yen, 500 yen is determined as one coin (not being five 100 yen coins), and one 50 yen coin (not being five 10 yen coins) and two 10 yen coins.

[0092] Below, the registration processor 4 is explained.

[0093] This registration processor 4 is arranged in the upper part of said case section 110, as shown in drawing 1 and drawing 2 , and the keyboard 210 which is one of the input means of this registration processor 4 is arranged at the operator side of that upper surface. ** / the present meter key 214 (henceforth a bundle key) which carries out, the cash basis, i.e., the settlement of accounts, which is the number key 211 of ** which carries out the number of ** of the sales amount of selling goods etc. as shown in this keyboard 210 at drawing 1 and drawing 2 , the section key 212 which shows a classification of goods, the subtotal key 213, and a registration end key, and various kinds of function keys 215 are arranged. While performing on-off control of a power supply on this keyboard 210, moreover, "registration" (business which publishes a receipt while carrying out accumulating-totals processing of the sales data of the goods which the customer purchased), "check" (business which carries out the report output of the goods sales data totaled by registration business), The mode setting key 216 which carries out selection and a setup of various business, such as "settlement of accounts" (business which clears the contents of the storage section while carrying out the report output of the goods sales data totaled by registration business), is formed.

[0094] Moreover, this registration processor 4 is equipped with the well-known optical reader (henceforth a scanner) 220 (refer * Nrawing 10) as an input means, and while this scanner 220 is arranged at said case section 110, that reading aperture 221 is arranged in the field which counters with the operator of said case section 110. In addition, this scanner 220 makes the bar code top to which the laser light by which outgoing radiation was carried out was given by goods using the polygon mirror and the reflective mirror from the laser transmitter scan, is called the laser scanner to general [which reads the goods information which a bar code has in response to that reflected light by the photo detector], and is a reader.

[0095] This scanner 220 prevents that vibration generated in case it is arranged through the vibroisolating material which consists

of India rubber etc. in said case section 110 and the coin expenditure machine 3 operates by this, although not illustrated is transmitted, and can prevent generating of failure resulting from this vibration etc.

[0096] Moreover, by arranging a scanner 220 in the case section 110, the space inside the case section 110 is utilized effectively, and the miniaturization of the registration processor 4 can be attained. Moreover, since the reading aperture 221 of a scanner 220 has been arranged to the field by the side of the operator of the case section 110, register operation becomes easy by making the bar code given to goods read.

[0097] Moreover, as the drop 230 for operators is formed in left-hand side in drawing 1 of said keyboard 210 and it is shown in the field by the side of a customer at drawing 2 , said coin frame drop H is adjoined and the drop 231 for customers is formed. Moreover, the receipt issue opening 234 is formed in said drop 230 bottom, and the receipt in which the predetermined matter was printed by the printer 235 (refer to drawing 10) is published from this receipt issue opening 234.

[0098] Below, it explains based on control-block drawing showing the control configuration of the registration processor 4 in drawing 10 .

[0099] As this control configuration is shown in this drawing While building in an arithmetic circuit Sales data, such as CPU (central processing unit)240 which performs various data processing based on the information, i.e., the data, inputted from the keyboard 210 etc., ROM (read only memory)241 which stores various control programs, and the amount of money of each goods which it keyed I/O Port216a which incorporates the keying signal from RAM (random access memory)242 to store and said mode setting key 216, Keyboard circuit 210a which incorporates the keying signal from said keyboard 210, I/O Port220a which * NOTICES * ☐the signal of said scanner 220, indicator controller 230a which outputs an indicative data to said indicators 230 aи 231, It consists of transmission I/F244 grades for transmitting change information to transmission I/F243 for performing transmission and reception of I/O Port 236 and the coin expenditure machine 3 which output printing data to a printer 235, the coin total amount, and change information, and the bill accounts machine 5.

[0100] In addition, said transmission I/F243 constitutes the total amount input means and the change information output means.

[0101] And said ROM241 and RAM242, I/O Port216a, keyboard circuit 210a, I/O Port220a, drop control circuit 230a, I/O Port 236, transmission I/F243, and transmission I/F244 are connected to CPU90 through the bus line 246.

[0102] Moreover, sales data catalogued file 242a which stores the sales data of each goods in said RAM242, Total amount area 242b as a storing means which stores one visitor's purchase total amount, Bill frame area 242c which stores a keyboard 210, the inputted customer, or the kept bill frame, Coin frame area 242d as coin total amount each storing means to store the total amount of a coin which received from said coin expenditure machine 3, Total amount area of ** 242e as the total amount storing means of ** which stores the total deposit frame kept, the total amount, i.e., the customer, of the bill frame stored in said bill frame area 242c, and the coin frame stored in coin frame area 242d, 242f of change information storage areas as a change information storing means to store, the change amount, i.e., the change information, for which was purchased and it asked from the total amount that the total amount of ** stored in this total amount area 242e was stored in ****** total amount area 242b, etc. is prepared.

[0103] Below, actuation of this registration processor 4 is explained.

[0104] If a customer purchases, the registration processor 4 is installed and wooden-clogs goods are brought to a settlement-of-accounts location, an operator, i.e., a cashier, will input information, such as prices of goods, from the above and a keyboard 210. While this customer's, i.e., one visitor, purchase total amount is computed by CPU240 based on this input, this total amount is stored by said total amount area 242b. Moreover, this total amount is displayed on drops 230 and 231.

[0105] And when wishing to pay the fraction amount of money of said purchase price, or a part of this purchase price in coins, this customer It is what throws a coin into the input port 10 of said coin expenditure machine 3 beforehand while the cashier is doing register operation. And when supplied, the total amount of the thrown-in coin is computed by the coin expenditure machine 3, it is transmitted through said transmission I/F243, and this total amount is stored in said coin frame area 242d.

[0106] And when a cashier keeps a bill for a customer based on the total amount which register operation finished and was displayed on said drop 230 and the amount of money of this kept bill is inputted from a keyboard 210, this bill frame is stored in said bill frame area 242c. Subsequently, the total amount of ** is called for from the bill amount stored in this bill amount area 242c, and the coin amount stored in said coin amount area 242d, and this total amount of ** is stored in said total amount area 242e. Subsequently, the frame which this total amount of **, and the purchase total amount and the change frame which are stored in said total amount area 24b are called for, and is applied to the bill of this change frame, and the frame concerning a coin are called for, and these are stored in said change information area 242f.

[0107] And the change information which starts a coin among said change information is transmitted to the coin expenditure machine 3 through said transmission I/F243. Moreover, the change information concerning a bill is transmitted to the bill accounts machine 5 mentioned later.

[0108] And if register operation is completed, a cashier fastens and a key 214 is operated, while said purchase total amount, change amount, etc. will be displayed on drops 230 and 231, the receipt with which predetermined matters, such as a trade name, the amount of money, purchase mark, consumption tax amount, and the total amount, were printed is published from the receipt issue opening 234 by the printer 235.

[0109] Below, the bill accounts machine 5 is explained. This bill accounts machine 5 consists of the payment discernment sections 310, the payment discernment sections 320, etc. which were arranged in the case 300 with which the bill recovery room (henceforth a recovery room) 301, the bill receipt room (henceforth a receipt room) 302, etc. were formed in the interior while being formed in box-like, as shown in drawing 11 and drawing 12 , and this case 300.

[0110] In addition, as this bill accounts machine 5 is shown in drawing 1 , where receipt installation is carried out at stowage 2b of susceptor 2, that part enters into the case section 110 bottom.

[0111] And as shown in drawing 12 , a slot for bills (henceforth insertion opening) 303 is formed in the upper part by the side of before said case 300, below the bill sending-out opening (henceforth sending-out opening) 304 is formed, and this sending-out opening 304 and said insertion opening 303 are divided with the vertical wall of said recovery room 301. In addition, pair stop pawl 304a for positioning the paid-out bill P and making it not make it fall is estranged and prepared in the anterior part of said * NOTICES * ☐pening 304.

[0112] And said receipt room 302 is the receipt room which once contains a ten thousand yen bill at random by the common conveyance way 331 1000 injected yen and 5000 yen, as shown in drawing 11 .

[0113] moreover, the bill conveyance way has the conveyance way 332 for collecting the circulation conveyance ways 333 and large denomination bills (ten thousand yen bill (a setup -- the 5000 yen bill)) for returning conveyance way 331a for paying a bill as change to the receipt room 302 out of the conveyance way 331 for carrying out receipt conveyance, and said receipt room 302, and the bill which is not contributed in the recovery room 301. A conveyance means to operate with the change means (change gate etc.) which are not illustrated each [these] conveyance way Based on the discernment result in the payment discernment section 320, send out the bill of the receipt room 302 to the sending-out opening 304 until the payment of the bill of assignment number of sheets is completed, or Actuation is suspended after sending out the assignment amount of money for the circulation actuation which returns an unnecessary bill, for example, a 5000 yen bill, to the receipt room 302, or collects large denomination bills in the recovery room 301 to the sending-out opening 304 with a repeat.

[0114] In addition, the change of 4000 or less yen is a thousand-yen bill, and the change of 5000 yen of 5000 yen or more is contributed with a tag and a thousand-yen bill.

[0115] Moreover, the opening of the front face of said recovery room 301 is carried out, this opening to the stowage container 340 is formed withdrawal, and this container 340 for recycling is formed in the front section lock 341 (refer to drawing 1), and can be pulled out now by unlocking this lock 341. Moreover, a ten thousand yen bill is contained by this container 340 for recycling. That is, since a ten thousand yen bill is not used as change, the ten thousand yen bills which the customer paid are collected in this container 340 for recycling.

[0116] In addition, the carrying-in conveyance means (drawing 12 un-illustrating [drawing 11 and]) 335 (refer to drawing 13) which consists of a roller or a belt etc. which conveys a bill, respectively prepares in said each conveyance ways 331, 332, and 333, and the **** cage and the expenditure conveyance means (drawing 13 un-illustrating [drawing 12 and]) 336 (refer to drawing 13) which consists of a roller or a belt also like expenditure conveyance way 331a, respectively are formed in them.

[0117] Moreover, the bill which the payment discernment section 310 arranged at the near upper wall of the entrance of the * NOTICES * ☐ning 303 consists of discernment means identify the classification of the bill inserted from the insertion opening 3 and was identified in this discernment section 310 minds the conveyance way 331 which conveys these bills, respectively, and it is conveyed at said receipt room 302 or the recovery room 301, and they are contained or collected.

[0118] Moreover, as shown in drawing 12 , the payment discernment section 320 is formed in expenditure conveyance way 331a, this payment discernment section 320 consists of discernment means to identify a thousand-yen bill, a 5000 yen bill, and a ten thousand yen bill, respectively, and it identifies whether the tag to pay out is a thousand-yen bill, respectively, or they are a 5000 yen bill or a ten thousand yen bill.

[0119] moreover, counting which carries out counting of the number of sheets of the bill which is immediately located in the downstream and is paid out of the payment discernment section 320 to expenditure conveyance way 331a -- a means 321 prepares -- having -- **** -- this counting -- it is stopped by a sending-out means 322 to explain below, and said expenditure conveyance means 336 when a means 321 carries out predetermined number-of-sheets counting of each bill paid out as change.

[0120] moreover, a sending-out means 322 to send out one bill at a time prepares in the pars basilaris ossis occipitalis of said receipt room 302 -- having -- moreover -- said insertion opening 301 -- a bill -- insertion **** -- a detection means 323 to detect things is established. Moreover, inside said case 300, the power unit 306 and the control unit which is not illustrated are contained.

[0121] Below, the control configuration of this bill accounts machine 5 is explained based on drawing 13 .

[0122] As this control configuration is shown in this drawing An arithmetic circuit CPU (central processing unit)350 and the various control programs which carry out internal organs RAM (random access memory)352 which stores ROM (read only memory)351 to store, change information, etc., transmission I/F353 which incorporates the change information from said registration processor 4, I/O Port354a which incorporates identification information from said payment discernment section 310, I/O Port354b which incorporates the identification information from said payment discernment section 320, counting -- I/O Port354c which incorporates the information from a means 321, and 354d of I/O Ports which incorporate the detection signal from the insertion detection means 323 It consists of a carrying-in conveyance means drive circuit 356 which controls the carrying-in conveyance means 335, an expenditure conveyance means drive circuit 357 which controls the expenditure * NOTICES * ☐ans 336, a sending-out means drive circuit 358 which controls the sending-out means 322.

[0123] And said ROM351 and RAM352, transmission I/F353, I/O Port354a, I/O Port354b, I/O Port354c, 354d of I/O Ports, the carrying-in conveyance means drive circuit 356, the expenditure conveyance means drive circuit 357, and the delivery drive circuit 358 are connected to CPU350 through the bus line 359.

[0124] And bill change information area 352a which stores in said RAM352 the change information transmitted from said registration processor 4 is prepared.

[0125] Below, actuation of this bill accounts machine 5 is explained.

[0126] If a customer purchases, registration processing is carried out by the registration processor 4 in the above at the time of payment, i.e., settlement of accounts, of the purchase price of wooden-clogs goods and this customer's purchase total amount is

displayed on said drop 230, a customer will hand an operator, i.e., a cashier, the bill equivalent to the frame paid with the bill of this displayed price. With the registration processor 4, if a cashier inputs the amount of money of the received bill from said keyboard 210, when a coin is thrown in and it is from the input port 10 of said coin expenditure machine 3 beforehand, it will be called for, the total amount, i.e., total amount of **, of the frame of this coin, and said inputted frame of a bill, and a change frame will be called for from this total amount of **, and said purchase total amount. It is transmitted to the bill accounts machine 5, the change frame, i.e., the change information, concerning the bill of this change frame, and this change information is stored in said bill change information area 352a.

[0127] When change information is stored in change information area 352a, the classification and the number of sheets of a bill which constitute this change frame by CPU350 are computed, and this classification and number of sheets are stored in said change information area 352a. Drive the sending-out means 322 and the expenditure conveyance means 357 which pay out this bill according to the classification of a bill, and expenditure of a bill is started. said paid-out bill -- said counting -- if predetermined number-of-sheets counting is carried out by the means 321, said sending-out means 322 will be stopped, and the delivery of the bill beyond predetermined number of sheets is suspended. And after the paid-out bill is sent out to the sending-out opening 304 by said sending-out conveyance means 336 and the delivery is completed, it stops and the expenditure conveyance means 336 pays out a bill required for change to the sending-out opening 304 at this time.

* NOTICES * □er, a cashier inserts this bill in said insertion opening 301, after the input of the amount of money of the bill kept for the customer finishes. Then, this insertion is detected by said detection means 323, if this detection is carried out, said carrying-in conveyance means 335 will operate, a bill is conveyed toward the inner direction, and it is identified by said payment discernment section 310 in this process whether it is the bill of normal, and they are collected at the receipt room 302. In addition, it is again used as change, circulating through the thousand-yen bill contained by said receipt room 302 and a 5000 yen bill.

[0129] Below, actuation of the above-mentioned check-out equipment 1 4, i.e., a registration processor, the coin expenditure machine 3, and the whole bill accounts machine 5 is explained.

[0130] As mentioned above, a customer puts the receipt cage into which purchased goods were put on the installation base 106 in which said non-registered goods are laid, after the purchase of goods finishes. An operator, i.e., a cashier, registers that is, inputs information, such as prices of said goods, with the scanner 220 and keyboard 210 which are an input means, respectively. While this customer's, i.e., one visitor, purchase total amount is computed by CPU240 based on this input, this total amount is stored in said total amount area 242b. Moreover, this total amount is displayed on drops 230 and 231.

[0131] On the other hand, when wishing for this customer to predict that the fraction amount of money of said purchase price comes out, or to pay a part of this purchase price in coins, while the cashier is doing register operation, a coin is beforehand thrown into the input port 10 of said coin expenditure machine 3. Then, the total amount of the thrown-in coin is computed by the coin expenditure machine 3, it is transmitted to the registration processor 4 through said transmission I/F96 and transmission I/F243, and this total amount is stored in said coin frame area 242d.

[0132] And when register operation finishes, purchase to said drop 230, the total amount of price is displayed, a cashier keeps a bill for a customer based on this total amount and the amount of money of this kept bill is inputted from a keyboard 210, this bill frame is stored in said bill frame area 242c. Subsequently, the total amount of ** is called for from the bill amount stored in this bill amount area 242c, and the coin amount stored in said coin amount area 242d, and this total amount of ** is stored in said total amount area 242e. Subsequently, a change frame is called for from this total amount of **, and the purchase total amount stored in said total amount area 24b, the frame paid with a bill from this change frame and the frame paid in coins are called for, and
* NOTICES * □red in said change information area 242f.

[0133] And the change information which starts a coin among said change information is transmitted to the coin expenditure machine 3 through said transmission I/F243 and transmission I/F96. Moreover, the change information concerning a bill is transmitted to the bill accounts machine 5.

[0134] And if register operation is completed, a cashier fastens and a key 214 is operated, while said purchase total amount, a change frame, etc. will be displayed on a drop 230, the rhe sheet with which the predetermined matter was printed by the printer is published from the receipt issue opening 2324.

[0135] If the coin expenditure machine 3 receives change information, i.e., a change frame, from the registration processing section 4, this change frame is stored in change information storage area 93b, and it is based on this change frame. Moreover, CPU90 It determines, the classification and the number of sheets, i.e., the change information, on a coin required for this change, and this change information is stored in said change information storage area 93b, and the coin and number of sheets of a class which said change takes based on this change information pay out it to the hold pan 12.

[0136] Moreover, if the bill accounts machine 5 receives change information, i.e., a change frame, from the registration processor 4, this change frame is stored in said change information area 352a, and it is determined, the classification and the number of sheets, i.e., the change information, on a bill required for this change, and this change information will be stored in said change information area 352a, and the bill and the number of sheets of a class which said change takes based on this change information will pay out it to the

[0137] And settlement-of-accounts processing is ended by a cashier's using a bill as change at the coin paid out to the hold pan 12 of said coin expenditure machine 3, and the sending-out opening 304 of the bill accounts machine 5, and passing a customer.

[0138] Moreover, the registration processor 3 records the amount of money of said customer's purchase goods, a section, etc. on said registration data file 242a, and updates the contents of registration data file 242a.

[0139] Thus, the above-mentioned check-out equipment 1 is set at the time of settlement-of-accounts processing. since it is common that a fraction is contained in purchase price, a customer by throwing a coin on hand into input port 10 beforehand,

without displaying the total amount on a drop 230 and waiting until The frame of this thrown-in coin is added to the frame of a bill, the total amount of ** is computed, it purchases with this total amount of **, change is called for from price, and * NOTICES * □-accounts processing is carried out. Therefore, a customer does not need to prepare the coin which is equivalent t the fraction amount of money, i.e., coin change, after purchasing at the time of settlement of accounts and displaying the total amount of price on a drop 230, since a cashier does not need to wait while a customer prepares said coin, settlement-of-accounts processing is made quickly and he can aim at improvement in processing effectiveness.

[0140] Moreover, since a cashier since change is computed by the coin expenditure machine 3 and the bill accounts machine 5, respectively does not need the activity for which the coin and bill which are change are counted and prepared, while being able to aim at improvement in processing effectiveness, the mental burden resulting from counting a cashier's change etc. is mitigated.

[0141] Moreover, since it can check the total amount of the thrown-in coin with the coin frame drop H while an injection of a coin is easy for it, since input port 10 is projected to the customer side, it can prevent troubles, such as an inconsistency of the frame thrown in among operators.

[0142] Moreover, since the total amount of the coin in which the coin expenditure machine 3 was thrown in computes independently registration processing of registration equipment equipment 4, it was stored in the coin total amount storage area and it can throw in a coin during registration processing, it can reduce the time amount which settlement-of-accounts processing takes, and can raise processing effectiveness.

[0143] Moreover, since the open door closing 113 whose case section 110 prepared the frame of the coin contained in this stowage container 70 can be opened wide and checked while containing the thrown-in coin to a stowage container 70 temporarily, the trouble produced among customers can be prevented.

[0144] Moreover, the increase in efficiency of settlement-of-accounts processing is attained from the total amount of ** being automatically called for from having computed the total amount of ** based on the total amount of the coin thrown in with this bill frame according to a keyboard 210 inputting the bill frame kept for the customer at the time of settlement of accounts.

[0145] Moreover, since the scanner 220 was arranged inside the case section 110, if the miniaturization of the registration processor 4 can be attained and it lengthens, the miniaturization of the whole check-out equipment can be attained. Moreover, since the scanner 220 has been arranged inside the case section 110 through ******, it can prevent failure resulting from vibration produced at the time of actuation of the coin expenditure machine 3 etc.

* NOTICES * □er, since the open lidding 11 closed based on the input signal of the first goods information input, i.e., registration processing, with the keying signal of an aperture and the registration end key 214, i.e., a bundle key, was formed in input port 10, it can prevent that a foreign matter with a mischief etc. is thrown into time amount other than the time of registration processing.

[0147] Moreover, the coin expenditure machine 3 forms the projection from the side in the shape of abbreviation for L characters by the case section 110 which it was made to project above a pedestal 101 and this pedestal 101, and formed the main part case 100. The configuration which distributes and arranges to these the expenditure belt 62 which are the conveyance way 20, coin hold section 60a or 60f, and an expenditure means, That is, arrange the portion of the conveyance way 20 in the upper part of the case section 110, and make a lengthwise direction meet the interior of the case section 110, and free passage way 24b is arranged. Since it considered as the configuration which arranges coin hold section 60a thru/or 60f, the expenditure belt 62, etc. in a pedestal 1010, the arrangement space of the coin expenditure machine 3 can be made small.

[0148] In addition, in the gestalt of the above-mentioned implementation, although considered as the configuration which forms the registration processor 4 in the case section 110, this is good also as a configuration which the coin expenditure machine 3 forms a registration processor in another object conventionally at the so-called well-known stand-alone format, and arranges this registration processor on the upper surface of a rest 2.

[0149] Moreover, although the denomination and number of sheets which constitute the change of a coin and a bill were computed with the coin expenditure machine 3 and the bill accounts machine 5, respectively, you may make it compute this with the registration processor 4 in the gestalt of the above-mentioned implementation.

[0150] Moreover, in the gestalt of the above-mentioned implementation, although the registration processor 4, the coin expenditure machine 3, and the bill accounts machine 5 constituted check-out equipment 1 As the factor which requires time amount most in settlement-of-accounts processing business mentioned above, this Since it is the time amount which the handling of coin change takes, said bill accounts machine 5 is omitted, it changes to this bill accounts machine 5, the conventional drawer is prepared, and the handling of a bill is good also as a configuration performed by this drawer. Thus, what is necessary is just to arrange the arrangement location of the drawer at the time of considering as the configuration using a drawer to stowage 2b which * NOTICES * □said bill accounts machine 5.

[0151] Moreover, in the gestalt of the above-mentioned implementation, although considered as the configuration which contains to stowage 2a which formed the coin expenditure machine 3 in susceptor 2, that is, was used as susceptor 2 and another object at it, this is good also as a configuration made into one.

[0152] moreover, disconnection of the bottom wall 71 of the stowage container 70 which contains a coin temporarily in the gestalt of the above-mentioned implementation -- a time check, although it was made to make when carried out by the means 97 at the time of a predetermined hour meter This is that from which the total amount of these coins is already computed by the stowage container 70 at the receipt **** time. Moreover, since a change coin is contained by coin hold section 60a thru/or 60f and is paid out in coins, you may make it make it open wide with the keying signal at the time of bundle actuation of the bundle key 214.

[0153]

[Effect of the Invention] As mentioned above, when a customer is going to purchase invention according to claim 1 including a

coin at the time of settlement-of-accounts processing and it is going to carry out payment of price While being able to throw the possessed coin into coin input port beforehand and computing the total amount of this thrown-in coin by the coin total amount calculation means, this total amount is stored in a coin total amount storing means. The total amount of this coin is totaled from a customer to the deposit frame inputted from the input means of a registration processor in the registration processor, and the total amount of ** is called for. It is based on the change information which purchased with this total amount of **, and was computed based on the total amount. From computing the class and the number of a required coin and paying out a coin required as change with a coin automatic expenditure machine While being able to reduce the time amount which settlement-of-accounts processing takes and being able to raise processing effectiveness, exact settlement of accounts can be performed, and it has the effect that reduction of the mental fatigue resulting from counting an operator's, i.e., a cashier, change coin etc. can be aimed at.

[0154] Moreover, in invention according to claim 1, since coin input port was made to project to the side which counters with the field which counters with the operator of the case section, and the customer of the opposite side and invention according to claim 2 prepared it, in addition to an effect of the invention according to claim 1, it has the effect that an injection of a customer's coin * NOTICES * □asy.

[0155] Moreover, invention according to claim 3 is set to invention according to claim 1 or 2. It becomes independent of the registration processing made based on the goods information inputted from the input means of a registration processor. The total amount of the normal coin thrown into the coin input port of coin automatic-sorting expenditure equipment is computed. Since this total amount is stored in a coin total amount storing means, to an effect of the invention according to claim 1 or 2 in addition, calculation of the total amount of the coin thrown in from coin input port Since it is made independently with registration processing of the input of the goods information which the customer purchased etc., a customer has the effect that the time amount of settlement-of-accounts processing can be reduced further, from the ability of a coin to be thrown in during registration processing in input port.

[0156] Moreover, invention according to claim 4 is set to claim 1 thru/or invention according to claim 3. From having carried out to displaying the total amount of the coin which established the coin frame display means for customers, and was stored in this coin frame display means at the coin total amount storing means In addition to claim 1 thru/or an effect of the invention according to claim 3, a customer has the effect that the total amount of the coin which self threw in from coin input port can be checked.

[0157] Moreover, while invention according to claim 5 establishes the stowage which contains temporarily the coin conveyed on the lower stream of a river of a conveyance way on this conveyance way in claim 1 thru/or invention according to claim 4 in the case section From having prepared in the side wall of said case section, open door closing which will be in the condition which can be opened by open actuation of an operator corresponding to a stowage When the total amount of the coin which the customer threw in differs from the frame which self threw in in addition to the claim thru/or the effect of the invention according to claim 4, it has an operation that the coin which opens open door closing and is contained by the stowage can be checked. moreover, open door closing -- an operator's, i.e., a cashier, switching operation -- **** -- since it will be in the condition which can be opened, it has the effect that safety is securable.

[0158] Moreover, in invention of claim 1 thru/or claim 5, while invention according to claim 6 prepares an exclusion pan in the side wall of the case section From having carried out to forming an exclusion means in the downstream of the discernment means formed in the conveyance way, being identified by said discernment means, if not regular, and making said exclusion pan * NOTICES * □oin claim 1 thru/or an effect of the invention according to claim 5 -- in addition, since a customer can check for customer itself that the coin which is not regular is mixing into the coin which carried out the self-injection, he has the effect that the trouble which boils between operators and is produced can be prevented.

[0159] Moreover, invention according to claim 7 is set to claim 1 thru/or invention according to claim 6. From our having decided to compute the total amount of ** based on the bill frame kept according to the input of the bill frame kept for the customer from an input means, and the coin total amount stored in said coin total amount storing means Since it is computed according to the input of the bill frame with which the operator kept the total amount of ** for the customer in addition to claim 1 thru/or the effect of the invention according to claim 6, it has the effect that the calculation can be made easy.

[0160] moreover, in claim 1 thru/or invention according to claim 7, since it arranged the optical reader in the field which counters with the operator of the case section, invention according to claim 8 has the effect that the register operation of goods information is easy, in addition to claim 1 thru/or an effect of the invention according to claim 7, while being able to make check-out equipment small.

[0161] Moreover, in invention according to claim 8, since invention according to claim 9 arranged the optical reader in the case section through the vibroisolating material, it can prevent that vibration of a coin automatic expenditure machine produced working is transmitted to an optical reader in addition to an effect of the invention according to claim 8, and has from things the effect that generating of failure resulting from vibration etc. can be prevented.

[0162] Moreover, invention according to claim 10 is set to claim 1 thru/or invention according to claim 8. It is based on the goods information input of the beginning from an input means in coin input port. An aperture, since open lidding closed with the keying signal of a registration end key was prepared, and coin input port is lidded by open lidding except from initiation of registration processing of a customer before registration termination in addition to claim 1 thru/or the effect of the invention according to claim 8 It has the effect that the injection of the foreign matter to coin input port with a mischief etc. can be prevented.

[0163] Invention according to claim 11 in moreover, the upper part of said case section of the main part case which consists of the case section which protruded on the side which counters [that the operator of the pedestal supported by susceptor and this pedestal is located in, and] towards the upper part The coin input port in which the various coins which the customer threw in are received, a conveyance means to convey the coin thrown in from this coin input port, A discernment means to identify whether it

is the no whose coin conveyed with this conveyance means is a coin of normal, The coin hold section which holds the coin of normal which prepared the conveyance way equipped with the exclusion means which was judged not to be regular with this discernment means, and which carries out coin exclusion, and has been conveyed by said pedestal from said conveyance way for every classification, Since it considered as the vertical mold while making the coin automatic expenditure machine small, since the expenditure section which pays out a coin for every classification, and the hold pan which holds the coin which paid out of this expenditure section were prepared, it has the coin that an installation space can be made small.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The whole check-out equipment perspective diagram of the gestalt of operation of this invention (perspective diagram seen from the operator side).
[Drawing 2] The ****** Fig. of the above-mentioned check-out equipment (perspective diagram seen from an operator and the opposite side).
[Drawing 3] The depth direction cross section of the input port portion of the coin automatic expenditure machine of the above-mentioned check-out equipment.
[Drawing 4] The cross section of the input port portion of the coin automatic expenditure machine of the above-mentioned check-out equipment (cross section in the A-A line of drawing 3).
[Drawing 5] The depth direction cross section of the coin automatic expenditure machine of the above-mentioned check-out equipment.
[Drawing 6] The longitudinal direction cross section of the coin automatic expenditure machine of the above-mentioned check-out equipment.
[Drawing 7] The sorting conveyance way of the coin automatic expenditure machine of the above-mentioned check-out equipment, the plan having shown the expenditure means (expenditure belt).
[Drawing 8] The cross section showing coin expenditure ****** to a hold pan from the coin hold section of the coin automatic expenditure machine of the above-mentioned check-out equipment (cross section in the B-B line in drawing 7).
[Drawing 9] Control-block drawing of the coin automatic expenditure machine of the above-mentioned check-out equipment.
[Drawing 10] Control-block drawing of the registration processor of the above-mentioned check-out equipment.
[Drawing 11] The plan of the bill accounts machine of the above-mentioned check-out equipment.
[Drawing 12] The cross section of the bill accounts machine of the above-mentioned check-out equipment.
[Drawing 13] Control-block drawing of the bill accounts machine of the above-mentioned check-out equipment.
[Description of Notations]
1 Check-out Equipment
2 Susceptor
3 Coin Expenditure Machine (Coin Automatic Expenditure Machine)
4 Registration Processor
10 Coin Input Port
11 Open Lidding
12 Hold Pan
20 Conveyance Way
23 Discernment Means
24 Exclusion Means
35 Coin -- Counting -- Means
40 Conveyance Belt (Conveyance Means)
60a-60f Coin hold section
90 CPU (Coin Total Amount Calculation Means)
93a Total amount storage area (coin total amount storing means)
93b Change information storage area (change information storing means)
96 Transmission I/F (Total Amount Output Means, Change Information Input Means)
100 Rest (a Part of Susceptor)
110 Case Section (a Part of Susceptor)
K Coin
120 Keyboard (Input Means)
220 Scanner (Optical Reader (Input Means))
242b Total amount area (a storing means to store the purchase total amount)
242d Coin frame area (coin total amount storing means)
242e The total amount area of ** (the total amount storing means of **)
240 CPU (Change Calculation Means)

243 Transmission I/F (Change Information Output Means, Total Amount Input Means)
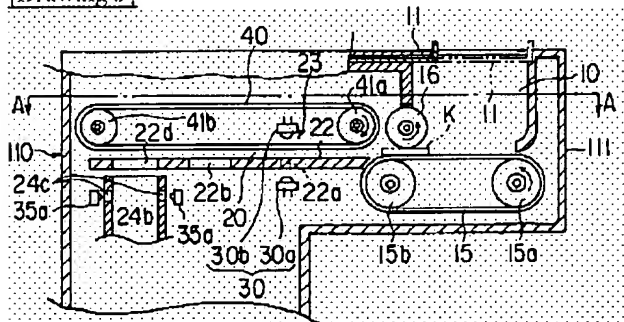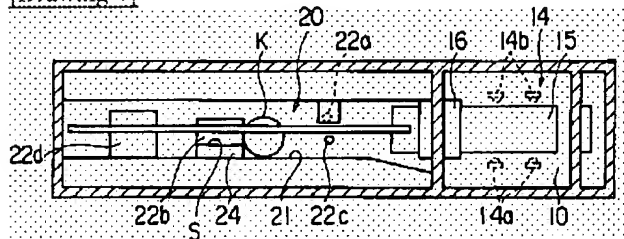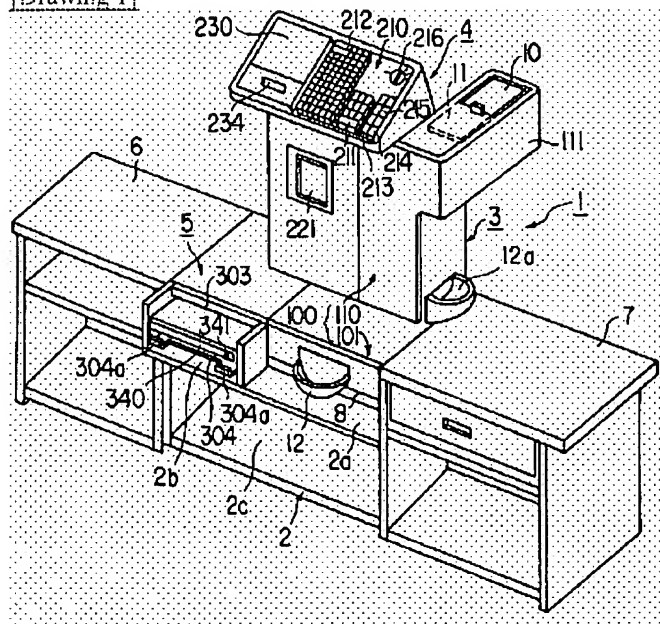
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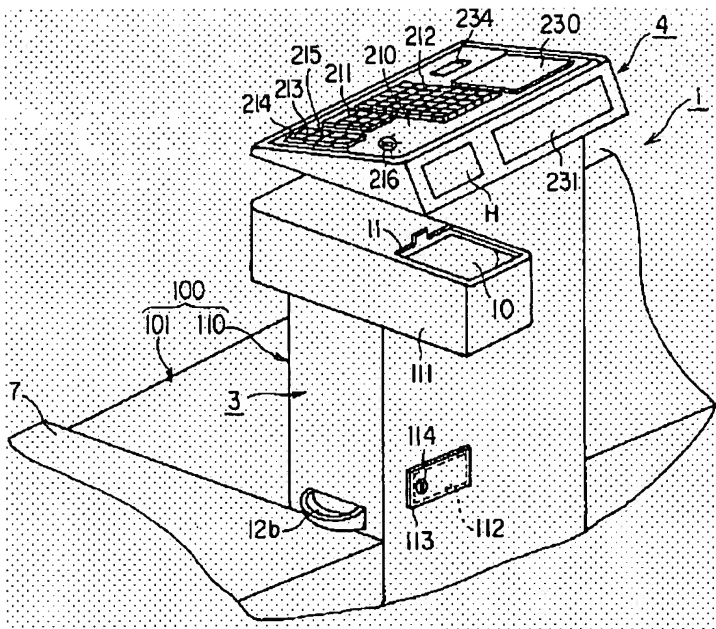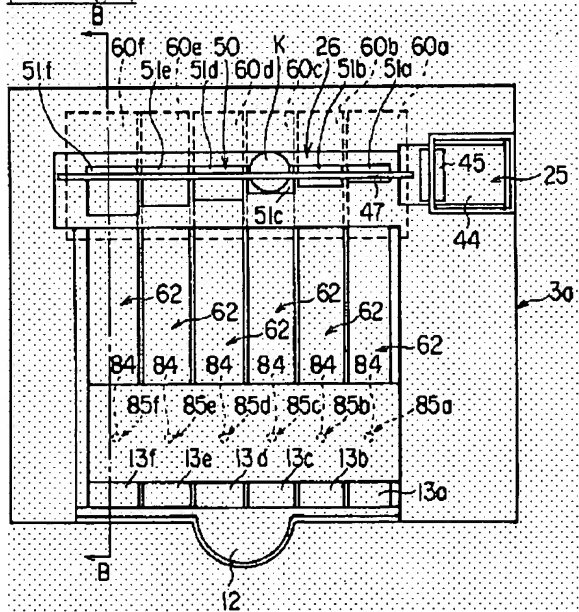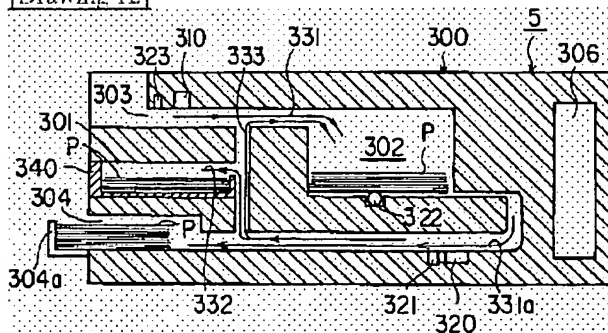
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DRAWINGS
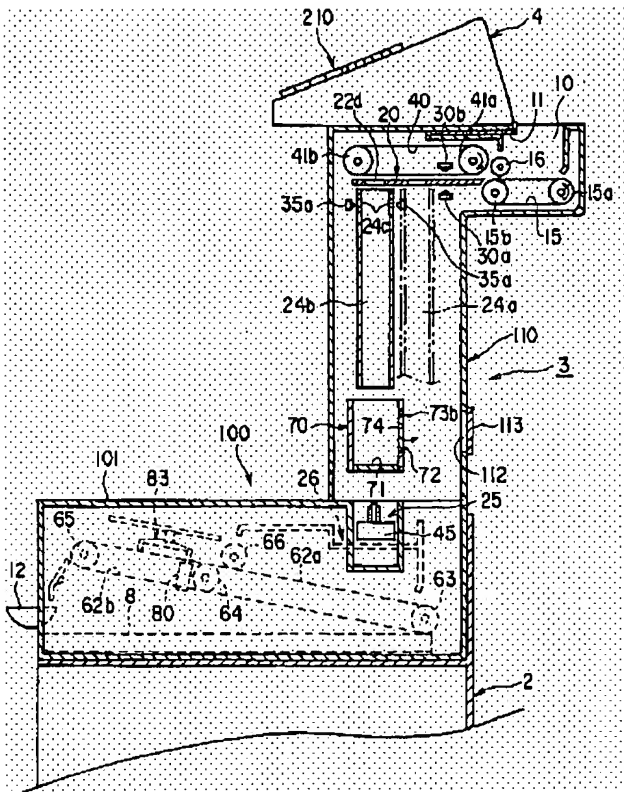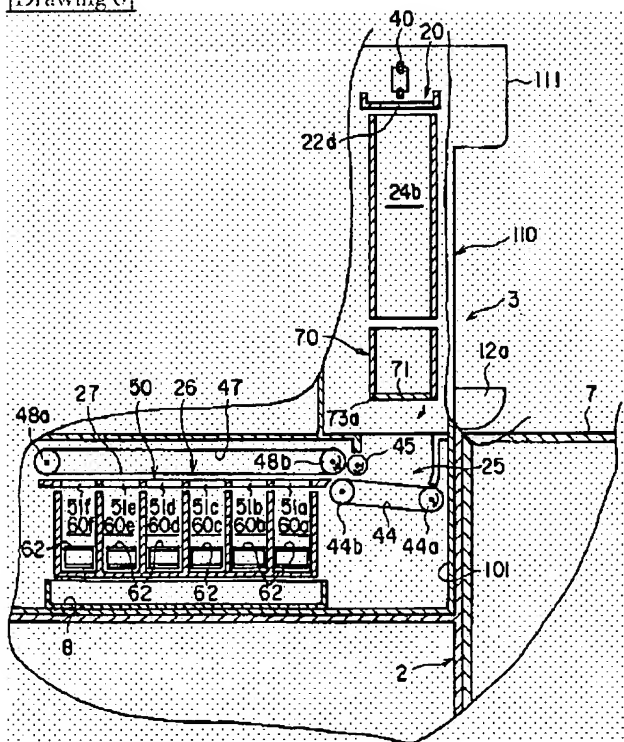
[Drawing 3]

[Drawing 4]

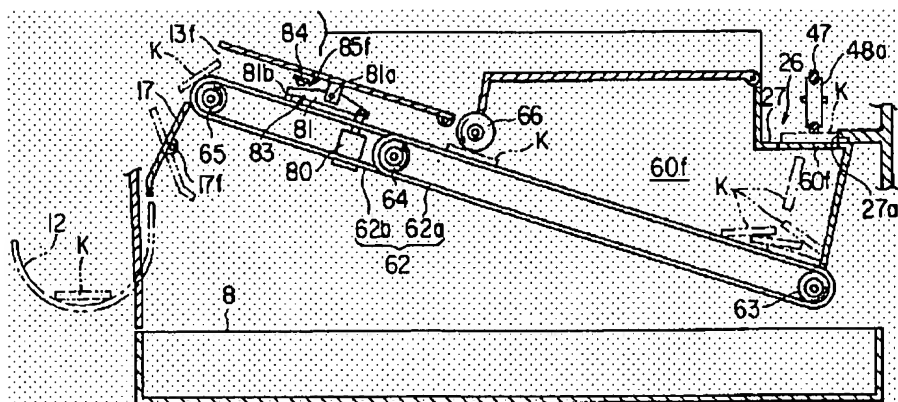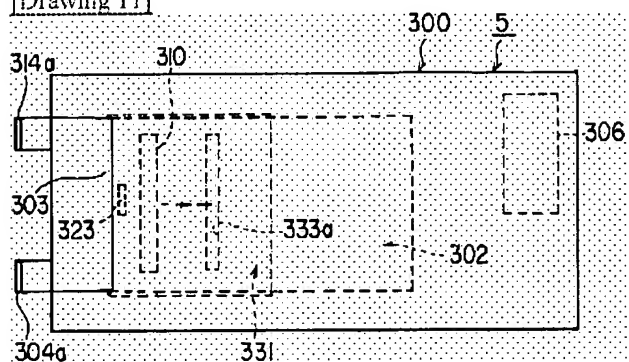

[Drawing 1]

[Drawing 2]

[Drawing 7]

[Drawing 12]

[Drawing 5]

[Drawing 6]

[Drawing 8]

[Drawing 11]

[Drawing 9]
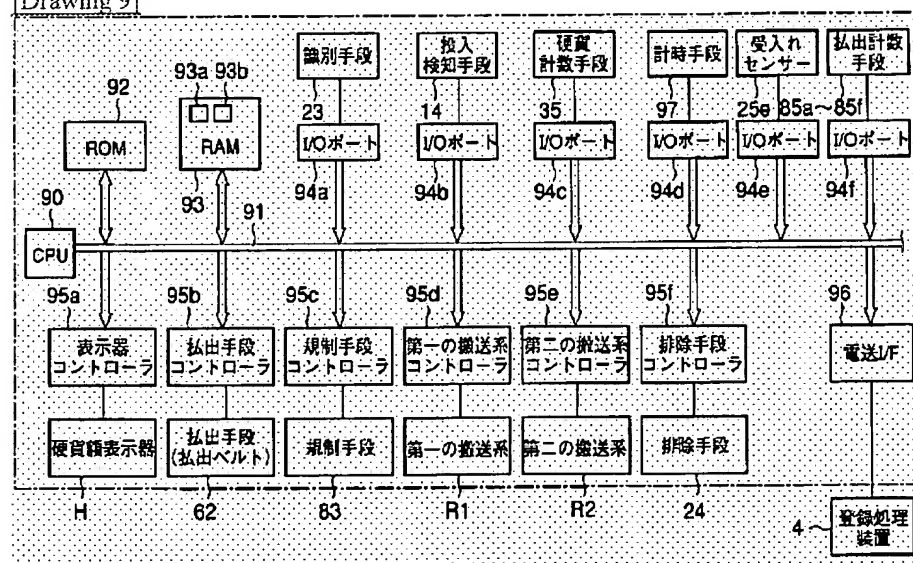
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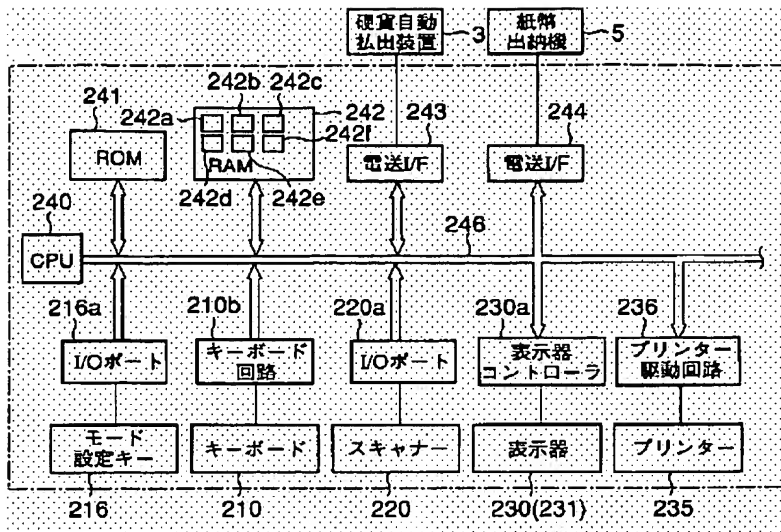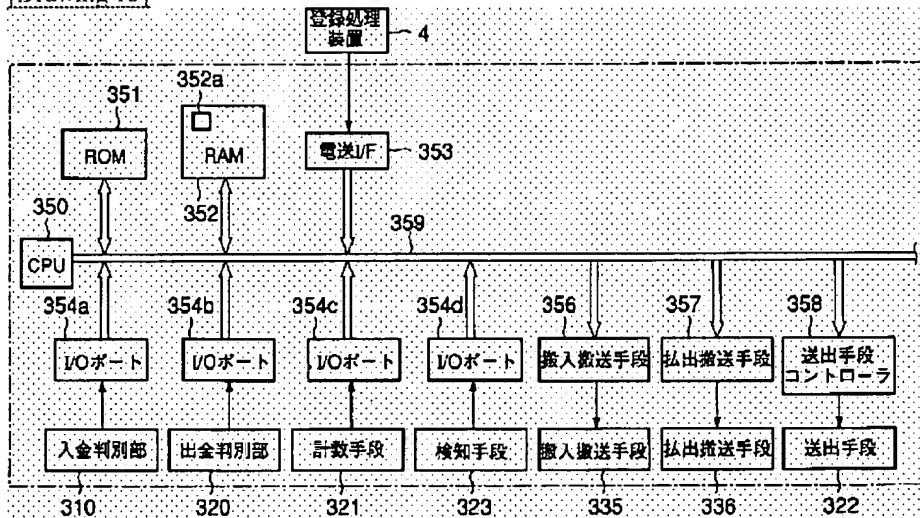
硬貨自動払出装置 ～ 3　紙幣出納機 ～ 5

241　242b 242c　242a ～ 242　242f
ROM　RAM　242d 242e
240
CPU　246
216a　210b　220a　230a　236
I/Oポート　キーボード回路　I/Oポート　表示器コントローラ　プリンター駆動回路
モード設定キー　キーボード　スキャナー　表示器　プリンター
216　210　220　230(231)　235

電送I/F　243　電送I/F　244

[Drawing 13]

登録処理装置 ～ 4

351　352a
ROM　RAM　電送I/F ～ 353
350　352　359
CPU
354a　354b　354c　354d　356　357　358
I/Oポート　I/Oポート　I/Oポート　I/Oポート　搬入搬送手段　払出搬送手段　送出手段コントローラ
入金判別部　出金判別部　計数手段　検知手段　搬入搬送手段　払出搬送手段　送出手段
310　320　321　323　335　336　322

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention] As mentioned above, a customer will purchase invention according to claim 1 including a coin at the time of settlement-of-accounts processing, and it will carry out payment of price at it. When carrying out, the possessed coin can be beforehand thrown into coin input port. While the total amount of this thrown-in coin is computed by the coin total amount calculation means, this total amount is stored in a coin total amount storing means. The total amount of this coin It is totaled from a customer to the deposit frame inputted from the input means of a registration processor in the registration processor, and the total amount of ** is called for. It is based on the change information which purchased with this total amount of **, and was computed based on the total amount. From computing the class and the number of a required coin and paying out a coin required as change with a coin automatic expenditure machine While being able to reduce the time amount which settlement-of-accounts processing takes and being able to raise processing effectiveness, exact settlement of accounts can be performed, and it has the effect that reduction of the mental fatigue resulting from counting an operator's, i.e., a cashier, change coin etc. can be aimed at.

[0154] Moreover, in invention according to claim 1, since coin input port was made to project to the side which counters with the field which counters with the operator of the case section, and the customer of the opposite side and invention according to claim 2 prepared it, in addition to an effect of the invention according to claim 1, it has the effect that an injection of a customer's coin can be made easy.

[0155] Moreover, invention according to claim 3 is set to invention according to claim 1 or 2, It becomes independent of the registration processing made based on the goods information inputted from the input means of a registration processor. The total amount of the normal coin thrown into the coin input port of coin automatic-sorting expenditure equipment is computed. Since this total amount is stored in a coin total amount storing means, to an effect of the invention according to claim 1 or 2 in addition, calculation of the total amount of the coin thrown in from coin input port Since it is made independently with registration processing of the input of the goods information which the customer purchased etc., a customer has the effect that the time amount of settlement-of-accounts processing can be reduced further, from the ability of a coin to be thrown in during registration processing in input port.

[0156] Moreover, invention according to claim 4 is set to claim 1 thru/or invention according to claim 3, Since it carried out to displaying the total amount of the coin which established the coin frame display means for customers, and was stored in this coin frame display means at a coin total amount storing means, in addition to a claim 1 thru/or an effect of the invention according to claim 3, a customer has the effect that the total amount of the coin which self threw in from coin input port can check.

[0157] Moreover, invention according to claim 5 is while establishing the stowage which contains temporarily the coin conveyed on the lower stream of a river of a conveyance way on this conveyance way in claim 1 thru/or invention according to claim 4 in the case section, Since open door closing which will be in the condition which can be opened by open actuation of an operator corresponding to a stowage was prepared in the side wall of said case section, when the total amount of the coin which the customer threw in differs from the frame which self threw in in addition to the claim thru/or the effect of the invention according to claim 4, it has an operation that the coin which opens open door closing and is contained by the stowage can be checked. moreover, open door closing -- an operator's, i.e., a cashier, switching operation -- **** -- since it will be in the condition which can be opened, it has the effect that safety is securable.

[0158] Moreover, invention according to claim 6 is while preparing an exclusion pan in the side wall of the case section in invention of claim 1 thru/or claim 5, From having carried out to forming an exclusion means in the downstream of the discernment means formed in the conveyance way, being identified by said discernment means, if not regular, and making said exclusion pan discharge a coin claim 1 thru/or an effect of the invention according to claim 5 -- in addition, since a customer can check for customer itself that the coin which is not regular is mixing into the coin which carried out the self-injection, he has the effect that the trouble which boils between operators and is produced can be prevented.

[0159] Moreover, invention according to claim 7 is set to claim 1 thru/or invention according to claim 6, From our having decided to compute the total amount of ** based on the bill frame kept according to the input of the bill frame kept for the customer from an input means, and the coin total amount stored in said coin total amount storing means Since it is computed according to the input of the bill frame with which the operator kept the total amount of ** for the customer in addition to claim 1 thru/or the effect of the invention according to claim 6, it has the effect that the calculation can be made easy.

[0160] moreover, in claim 1 thru/or invention according to claim 7, since it arranged the optical reader in the field which counters with the operator of the case section, invention according to claim 8 has the effect that the register operation of goods information is easy, in addition to claim 1 thru/or an effect of the invention according to claim 7, while being able to make check-out equipment small.

[0161] Moreover, in invention according to claim 8, since invention according to claim 9 arranged the optical reader in the case section through the vibroisolating material, it can prevent that vibration of a coin automatic expenditure machine produced working is transmitted to an optical reader in addition to an effect of the invention according to claim 8, and has from things the effect that generating of failure resulting from vibration etc. can be prevented.

First Hit

L2: Entry 95 of 326   File: JPAB   Apr 28, 2000

PUB-NO: JP02000123215A
DOCUMENT-IDENTIFIER: JP 2000123215 A
TITLE: AUTOMATIC COIN PAYING-OUT MACHINE AND CHECK-OUT DEVICE USING THE SAME

PUBN-DATE: April 28, 2000

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ASSIGNEE-INFORMATION:
NAME   COUNTRY

TOSHIBA TEC CORP

APPL-NO: JP10292002
APPL-DATE: October 14, 1998

INT-CL (IPC): G07 D 1/06; G07 G 1/12

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a check-out device whose adjustment processing
efficiency has been improved.

SOLUTION: This check-out device is provided with an automatic coin paying- out
means 3 in which each kind of coin inputted from a coin input port 10 is carried by
a carrying means (carrying belt 40), and identified by an identifying means 23, and
the total sum of the coins is calculated, and charge is paid out by a paying-out
means (ejecting belt 62) based on the charge sum, and a registration processor 4 in
which the total deposited sum is calculated from a purchase total sum calculated
based on commodity information inputted by an input means (keyboard 210) for
inputting a deposited sum and the total sum of the inputted coins, and a charge sum
is calculated based on the total deposited sum and the purchase total sum, and the
charge sum is outputted to the automatic coin paying-out means 3. In this case, the
charge sum related with coins among the charge sum is transmitted to the automatic
coin paying-out means 3 so that the coin charge can be paid out from the automatic
coin paying-out means 3 based on the charge sum.

| (51)Int.Cl.⁷		識別記号	ＦＩ			テーマコード(参考)
G07D	1/06		G07D	1/06		3E001
G07G	1/12	321	G07G	1/12	321A	3E042

(54)【発明の名称】　硬貨自動払出機およびこの硬貨自動払機を用いたチェックアウト装置

(57)【要約】

【課題】　この発明は、精算処理の効率を向上させたチェックアウト装置を提供することにある。

【解決手段】　硬貨投入口10から投入された各種硬貨を搬送手段（搬送ベルト40）で搬送し識別手段23で識別して硬貨合計額を算出し、釣銭額に基いて払出手段（払出ベルト62）によって釣銭を払出す硬貨自動払出機3と、預かり金額などを入力する入力手段（キーボード210）から入力された商品情報に基づいて算出された買上合計額と、投入された硬貨の合計額とから総預額を算出するとともに、この総預額と前記買上合計額とに基づいて釣銭額を算出し、この釣銭額を硬貨自動払出機3に出力する登録処理装置4とから構成され、前記釣銭額のうち硬貨に係る釣銭額を硬貨自動払出機3に送り、この釣銭額に基いて硬貨自動払出機3から硬貨釣銭を払い出すチェックアウト装置。

1
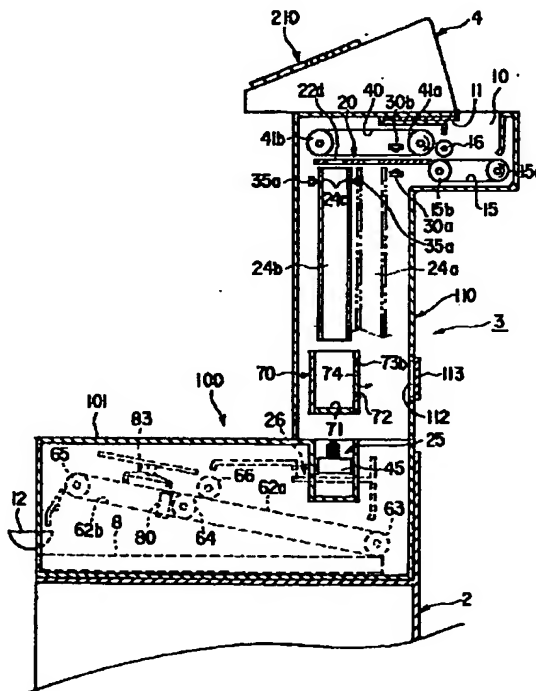
【特許請求の範囲】

【請求項1】　支持台に支持される基台部とこの基台部の操作者が位置する側と対向する側に上方に向けて突設した筐体部とからなる本体筐体と、前記筐体部の上部に設けられ顧客が投入した各種硬貨を受け入れる硬貨投入口、この硬貨投入口から投入された硬貨を搬送する搬送手段、この搬送手段で搬送された硬貨の種別を識別する識別手段、この識別された硬貨を計数する硬貨計数手段、前記識別手段の識別した識別されない硬貨を正規な硬貨でないとして排除する排除手段を備えた搬送路と、前記基台部に設けられ前記搬送路から搬送されてきた正規の硬貨を種別毎に収容する硬貨収容部と、前記硬貨投入口に投入され識別手段で識別された正規硬貨の合計額を算出する硬貨合計額算出手段と、この硬貨合計額算出手段で算出された合計額を格納する硬貨合計額格納手段と、この硬貨合計額格納手段の合計額を出力する合計額出力手段と、釣銭情報を入力する釣銭情報入力手段と、この釣銭情報入力手段から入力された釣銭情報に基づいて硬貨収容部から釣銭に要する硬貨を種別毎に払い出す払出手段と、前記基台部の操作者の位置する側に設けられ前記払出手段から払い出された硬貨を収容する収容皿とから構成した硬貨自動払出機と、

商品コード、価格など商品情報、顧客からの預かり金額などの各種情報を入力する入力手段、この入力手段から入力された商品情報に基づいて算出された顧客の買上合計額を格納する格納手段、前記硬貨自動払出機の合計額出力手段からの合計額情報を入力する合計額入力手段、前記入力手段から入力された預かり金額と前記合計額入力手段から入力され硬貨合計額格納手段に格納された硬貨合計額とを合計して求めた顧客からの総預額を格納する総預額格納手段、前記総預額と前記買上合計額とに基づいて釣銭額を算出する釣銭算出手段、この釣銭算出手段で算出された釣銭情報を硬貨自動払出機の釣銭情報入力手段に出力する釣銭情報出力手段を備えた登録処理装置とから構成され、前記釣銭算出手段で算出された釣銭額のうち硬貨に係る釣銭を前記硬貨自動払出機によって払い出すようにしたことを特徴とするチェックアウト装置。

【請求項2】　請求項1記載の発明において、硬貨投入口を筐体部の操作者と対向する面と反対側の顧客と対向する側に突出させて設けたことを特徴とするチェックアウト装置。

【請求項3】　請求項1または請求項2記載の発明において、登録処理装置の入力手段から入力された商品情報に基いてなされる登録処理と独立して、硬貨自動選別払出装置の硬貨投入口に投入された正規硬貨の合計額を算出し、この合計額を硬貨合計額格納手段に格納することを特徴とするチェックアウト装置。

【請求項4】　請求項1ないし請求項3記載の発明において、顧客用の硬貨額表示手段を設け、この硬貨額表示

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手段に硬貨合計額格納手段に格納された硬貨の合計額を表示させることを特徴とするチェックアウト装置。

【請求項5】　請求項1ないし請求項4記載の発明において、搬送路の下流にこの搬送路で搬送されてきた硬貨を一時的に収納する収納部を筐体部に設けるとともに、収納部に対応して操作者の開操作によって開放可能状態となる開閉扉を前記筐体部の側壁に設けたことを特徴とするチェックアウト装置。

【請求項6】　請求項1ないし請求項5記載の発明において、筐体部の側壁に排除皿を設けるとともに、搬送路に設けた識別手段の下流側に排除手段を設け、前記識別手段によって正規でないと識別された硬貨を前記排除皿に排出させることを特徴とするチェックアウト装置。

【請求項7】　請求項1ないし請求項6記載の発明において、入力手段からの顧客から預かった紙幣額の入力に応じて、預かった紙幣額と前記硬貨合計額格納手段に格納された硬貨合計額とに基づいて総預額を算出することを特徴とするチェックアウト装置。

【請求項8】　請求項1ないし請求項7記載の発明において、筐体部の操作者と対向する面に光学的読取装置を配設したことを特徴とするチェックアウト装置。

【請求項9】　請求項8に記載の発明において、光学的読取装置を防振材を介して筐体部に配設したことを特徴とするチェックアウト装置。

【請求項10】　請求項1ないし請求項7記載の発明において、硬貨投入口に入力手段からの最初の商品情報入力情報に基づいて開き、登録終了キーのキー信号によって閉じる開閉蓋を設けたことを特徴とするチェックアウト装置。

【請求項11】　支持台に支持される基台部とこの基台部の操作者が位置する側と対向する側に上方に向けて突設した筐体部とからなる本体筐体と、前記筐体部の上部に設けられ顧客が投入した各種硬貨を受け入れる硬貨投入口、この硬貨投入口から投入された硬貨を搬送する搬送手段、この搬送手段で搬送された硬貨の種別を識別する識別手段、この識別された硬貨を計数する計数手段、前記識別手段で識別されない硬貨を正規な硬貨でないとして排除する排除手段を備えた搬送路と、前記基台部の下面側に設けられ前記搬送路から搬送されてきた正規の硬貨を種別毎に収容する硬貨収容部と、釣銭情報入力手段から入力された釣銭情報に基づいて釣銭に要する硬貨の種類と個数を決定する決定手段と、この決定手段の決定の基づいて硬貨収納部に収納された種別毎の硬貨を種別毎に払い出す払出手段と、前記基台部の操作者の位置する側に設けられ前記払出手段から払い出された硬貨を収容する収容皿と、前記硬貨投入口に投入され識別手段で識別された正規硬貨の合計額を算出する硬貨合計額算出手段と、この硬貨合計額算出手段で算出された合計額を格納する硬貨合計額格納手段と、この硬貨合計額格納手段の合計額をチェックアウト装置に出力する出力手段

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と、チェックアウト装置からの釣銭情報を入力する釣銭
情報入力手段から構成したことを特徴とする硬貨自動払
出機。
【発明の詳細な説明】
【0001】
【発明の属する技術分野】この発明は、硬貨自動払出機
および硬貨自動払出機を用いたチェックアウト装置に関
する。
【0002】
【従来の技術】従来、小売店あるいはスーパーマーケッ
トなどにおいて顧客の買上げた商品の買上代金の支払い
つまり精算等に使用されている電子式レジスターあるい
はPOSシステムの端末装置など（以下単にレジスター
という）に接続されて、釣り銭に硬貨を含む場合に、こ
の釣銭のうちの硬貨（以下釣銭硬貨という）を自動的に
払い出す硬貨自動払出機が使用されている。
【0003】この硬貨自動払出機は、顧客が買上げた商
品の買上代金の支払つまり精算時に釣銭硬貨を操作者つ
まりキャッシャーが、数える作業の必要がないことから
硬貨を数える手間を省略できるとともに、キャッシャー
の精神的疲労を軽減でき、また、正確に釣り銭が払い出
されることから、例えば夕方など多くの顧客が来店し精
算場所が混雑する際に精算処理を迅速にかつ正確にでき
ることから精算業務の能率を向上させることができると
いう利点がある。
【0004】しかし、従来の硬貨自動払出機は、上述の
ように精算処理時にレジスターによって算出された釣り
銭のうちの硬貨釣銭額情報に基づいて、釣り銭が払い出
されることから、キャッシャーの硬貨を数える作業を低
減するとともにキャッシャーの精神的疲労を低減できる
という点では大きな利点があるが、精算時の能率を低下
させているつぎの要因を解決できるものではない。
【0005】つまり、精算時において一客の精算処理に
長時間を要する要因は、精算場所においてキャッシャー
が、レジスターを操作して顧客の買上げた商品の登録処
理をし、登録終了操作（以下締めキー操作という）をす
ることにより表示器に合計額が表示され、この表示器に
表示された金額のうち硬貨で支払う部分があるときは、
顧客は前記合計額が表示された後に、前記硬貨で支払う
ための硬貨を準備するものであり、この硬貨を準備する
のに時間を要するため、この準備時間が精算遅延の大き
な要因となっているものである。つまり、顧客が硬貨の
準備をする間キャッシャーは精算処理を中断して待って
いなければならず、この時間だけ精算業務は遅れること
になる。さらにまた、キャッシャーは顧客から預かった
硬貨の額を確認しなければならず、この確認のための時
間も精算処理を遅延させる要因となっているものであ
る。
【0006】このように精算時における一客の精算処理
を遅延させる大きな要因は、上記のように顧客が支払う

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買上代金のうちの硬貨を準備のために時間を要し、ま
た、キャッシャーが顧客から受け取った硬貨の確認ため
に時間を要することにある。しかし、従来の硬貨自動払
出機は、これらの要因を解消できるものではない。
【0007】
【発明が解決しようとする課題】上記のように精算時に
おける一客の精算を遅延させる大きな要因が、顧客が支
払う代金のうちの硬貨の準備に時間を要し、また、キャ
ッシャーが顧客から受け取った硬貨の確認ために時間を
要することにあるが、従来の硬貨自動払出機は硬貨釣銭
の払出しはできるものの、上記遅延要因を解消できるも
のではない。
【0008】
【課題を解決するための手段】この発明は上記事情に鑑
みてなされたもので、請求項1記載の発明は、支持台に
支持される基台部とこの基台部の操作者が位置する側と
対向する側に上方に向けて突設した筐体部とからなる本
体筐体と、前記筐体部の上部に設けられ顧客が投入した
各種硬貨を受け入れる硬貨投入口、この硬貨投入口から
投入された硬貨を搬送する搬送手段、この搬送手段で搬
送された硬貨の種別を識別する識別手段、この識別され
た硬貨を計数する硬貨計数手段、前記識別手段の識別し
た識別されない硬貨を正規な硬貨でないとして排除する
排除手段を備えた搬送路と、前記基台部に設けられ前記
搬送路から搬送されてきた正規の硬貨を種別毎に収容す
る硬貨収容部と、前記硬貨投入口に投入され識別手段で
識別された正規硬貨の合計額を算出する硬貨合計額算出
手段と、この硬貨合計額算出手段で算出された合計額を
格納する硬貨合計額格納手段と、この硬貨合計額格納手
段の合計額を出力する合計額出力手段と、釣銭情報を入
力する釣銭情報入力手段と、この釣銭情報入力手段から
入力された釣銭情報に基づいて硬貨収容部から釣銭に要
する硬貨を種別毎に払い出す払出手段と、前記基台部の
操作者の位置する側に設けられ前記払出手段から払い出
された硬貨を収容する収容皿とから構成した硬貨自動払
出機と、商品コード、価格など商品情報、顧客からの預
かり金額などの各種情報を入力する入力手段、この入力
手段から入力された商品情報に基づいて算出された顧客
の買上合計額を格納する格納手段、前記硬貨自動払出機
の合計額出力手段からの合計額情報を入力する合計額入
力手段、前記入力手段から入力された預かり金額と前記
合計額入力手段から入力され硬貨合計額格納手段に格納
された硬貨合計額とを合計して求めた顧客からの総預額
を格納する総預額格納手段、前記総預額と前記買上合計
額とに基づいて釣銭額を算出する釣銭算出手段、この釣
銭算出手段で算出された釣銭情報を硬貨自動払出機の釣
銭情報入力手段に出力する釣銭情報出力手段を備えた登
録処理装置とから構成され、前記釣銭算出手段で算出さ
れた釣銭額のうち硬貨に係る釣銭を前記硬貨自動払出機
によって払い出すようにしたチェックアウト装置とした

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【0009】このように構成した請求項1記載の発明は、精算処理時に顧客は硬貨を含めて買上代金の支払いをしようとするときは、所持している硬貨を予め硬貨投入口に投入することができ、この投入された硬貨の合計額が硬貨合計額算出手段によって算出されるとともにこの合計額は硬貨合計額格納手段に格納され、この硬貨の合計額は、登録処理装置において登録処理装置の入力手段から入力された顧客からの預り金額に合計され総預額が求められ、この総預額と買上合計額とに基づいて算出された釣銭情報に基づいて、硬貨自動払出機3によって必要な硬貨の種類と個数を算出して釣銭として必要な硬貨の払い出しをすることにより、精算処理に要する時間を低減して処理効率を高めることができるとともに正確な精算ができ、また、操作者つまりキャッシャーの釣銭硬貨を数えるなどに起因する精神的疲労の低減を図ることができるという作用を有するものである。

【0010】また、請求項2記載の発明は、請求項1記載の発明において、硬貨投入口を筐体部の操作者と対向する面と反対側の顧客と対向する側に突出させて設けたチェックアウト装置としたものである。

【0011】このように請求項2記載の発明は、請求項1記載の発明において、硬貨投入口を筐体部の操作者と対向する面と反対側の顧客と対向する側に突出させて設けたことから、請求項1記載の発明の作用に加えて、顧客の硬貨の投入を容易にすることができるという作用を有するものである。

【0012】また、請求項3記載の発明は、請求項1または請求項2記載の発明において、登録処理装置の入力手段から入力された商品情報に基いてなされる登録処理と独立して、硬貨自動選別払出装置の硬貨投入口に投入された正規硬貨の合計額を算出し、この合計額を硬貨合計額格納手段に格納することとしたチェックアウト装置としたものである。

【0013】このように請求項3記載の発明は、請求項1または請求項2記載の発明において、登録処理装置の入力手段から入力された商品情報に基いてなされる登録処理と独立して、硬貨自動選別払出装置の硬貨投入口に投入された正規硬貨の合計額を算出し、この合計額を硬貨合計額格納手段に格納することとしたことから、請求項1または請求項2記載の発明の作用に加えて、硬貨投入口から投入される硬貨の合計額の算出は、顧客の買上げた商品情報の入力などの登録処理と独立してなされることから、顧客は登録処理中に硬貨を投入口に投入することができることから、更に精算処理の時間を低減できるという作用を有するものである。

【0014】また、請求項4記載の発明は、請求項1ないし請求項3記載の発明において、顧客用の硬貨額表示手段を設け、この硬貨額表示手段に硬貨合計額格納手段に格納された硬貨の合計額を表示させることとしたチェ

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ックアウト装置としたものである。

【0015】このように請求項4記載の発明は、請求項1ないし請求項3記載の発明において、顧客用の硬貨額表示手段を設けこの硬貨額表示手段に硬貨合計額格納手段に格納された硬貨の合計額を表示させることとしたことから、請求項1ないし請求項3記載の発明に作用に加えて、顧客は自己が硬貨投入口から投入した硬貨の合計額を確認できるという作用を有するものである。

【0016】また、請求項5記載の発明は、請求項1ないし請求項4記載の発明において、搬送路の下流にこの搬送路で搬送されてきた硬貨を一時的に収納する収納部を筐体部に設けるとともに、収納部に対応して操作者の開操作によって開放可能状態となる開閉扉を前記筐体部の側壁に設けたチェックアウト装置としたものである。

【0017】このように請求項5記載の発明は、請求項1ないし請求項4記載の発明において、搬送路の下流にこの搬送路で搬送されてきた硬貨を一時的に収納する収納部を筐体部に設けるとともに、収納部に対応して操作者の開操作によって開放可能状態となる開閉扉を前記筐体部の側壁に設けたことから、請求項1ないし請求項4記載の発明の作用に加えて、顧客が投入した硬貨の合計額が自己の投入した額と異っているときは、開閉扉を開けて収納部に収納されている硬貨を確認できるという作用を有するものである。また、開閉扉は操作者つまりキャッシャーの開閉操作によって開放可能状態となることから安全性を確保できるという作用を有するものである。

【0018】また、請求項6記載の発明は、請求項1ないし請求項5記載の発明において、筐体部の側壁に排除皿を設けるとともに、搬送路に設けた識別手段の下流側に排除手段を設け、前記識別手段によって正規でないと識別され硬貨を前記排除皿に排出させることとしたチェックアウト装置としたものである。

【0019】このように請求項6記載の発明は、請求項1ないし請求項5の発明において、筐体部の側壁に排除皿を設けるとともに、搬送路に設けた識別手段の下流側に排除手段を設け、前記識別手段によって正規でないと識別され硬貨を前記排除皿に排出させることとしたことから、請求項1ないし請求項5記載の発明の作用に加えて、顧客は自己投入した硬貨の中に正規でない硬貨が混入していたことを、顧客自身で確認できることから操作者との間に生じるトラブルなどを防止できるという作用を有するものである。

【0020】また、請求項7記載の発明は、請求項1ないし請求項6記載の発明において、入力手段からの顧客から預かった紙幣額の入力に応じて紙幣額と前記硬貨合計額格納手段に格納された硬貨合計額とに基づいて総預額を算出することとしたチェックアウト装置としたものである。

【0021】このように請求項7記載の発明は、請求項

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1ないし請求項6記載の発明において、入力手段からの
顧客から預かった紙幣額の入力に応じて預かった紙幣額
と前記硬貨合計額格納手段に格納された硬貨合計額とに
基づいて総預額を算出することとしたことから、請求項
1ないし請求項6記載の発明の作用に加えて、総預額は
操作者が顧客から預かった紙幣額の入力に応じて算出さ
れることから、その算出を容易にすることができるとい
う作用を有するものである。

【００２２】また、請求項8記載の発明は、請求項1な
いし請求項7記載の発明において、筐体部の操作者と対
向する面に光学的読取装置を配設したチェックアウト装
置としたものである。

【００２３】このように請求項8記載の発明は、請求項
1ないし請求項7記載の発明において、筐体部の操作者
と対向する面に光学的読取装置を配設したことから、請
求項1ないし請求項7記載の発明の作用に加えて、チェ
ックアウト装置を小型にできるとともに商品情報の登録
操作が容易であるという作用を有するものである。

【００２４】また、請求項9記載の発明は、請求項8に
記載の発明において、光学的読取装置を防振材を介して
筐体部に配設したチェックアウト装置としたものであ
る。

【００２５】このように請求項9記載の発明は、請求項
8に記載の発明において、光学的読取装置を防振材を介
して筐体部に配設したことから、請求項8記載の発明の
作用に加えて、硬貨自動払出機の動作中に生じる振動が
光学的読取装置に伝達されることを防止できることから、
振動に起因する故障などの発生を防止できるという作用
を有するものである。

【００２６】また、請求項１０記載の発明は、請求項1
ないし請求項8記載の発明において、硬貨投入口に入力
手段からの最初の商品情報入力情報に基づいて開き、登
録終了キーのキー信号によって閉じる開閉蓋を設けたチ
ェックアウト装置としたものである。

【００２７】このように請求項１０記載の発明は、請求
項1ないし請求項8記載の発明において、硬貨投入口に
入力手段からの最初の商品情報入力情報に基づいて開
き、登録終了キーのキー信号によって閉じる開閉蓋を設
けたことから、請求項1ないし請求項8記載の発明の作
用に加えて、顧客の登録処理の開始から登録終了までの
間以外は硬貨投入口は開閉蓋によって閉蓋されているた
め、悪戯などによる硬貨投入口への異物などの投入を防
止できるという作用を有するものである。

【００２８】また、請求項１１記載の発明は、支持台に
支持される基台部とこの基台部の操作者が位置する側と
対向する側に上方に向けて突設した筐体部とからなる本
体筐体と、前記筐体部の上部に設けられ顧客が投入した
各種硬貨を受け入れる硬貨投入口、この硬貨投入口から
投入された硬貨を搬送する搬送手段、この搬送手段で搬
送された硬貨の種別を識別する識別手段、この識別され

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た硬貨を計数する計数手段、前記識別手段で識別されな
い硬貨を正規な硬貨でないとして排除する排除手段を備
えた搬送路と、前記基台部の下面側に設けられ前記搬送
路から搬送されてきた正規の硬貨を種別毎に収容する硬
貨収容部と、釣銭情報入力手段から入力された釣銭情報
に基づいて釣銭に要する硬貨の種類と個数を決定する決
定手段と、この決定手段の決定の基づいて硬貨収納部に
収納された種別毎の硬貨を種別毎に払い出す払出手段
と、前記基台部の操作者の位置する側に設けられ前記払
出手段から払い出された硬貨を収容する収容皿と、前記
硬貨投入口に投入され識別手段で識別された正規硬貨の
合計額を算出する硬貨合計額算出手段と、この硬貨合計
額算出手段で算出された合計額を格納する硬貨合計額格
納手段と、この硬貨合計額格納手段の合計額をチェック
アウト装置に出力する出力手段と、チェックアウト装置
からの釣銭情報を入力する釣銭情報入力手段から構成し
た硬貨自動払出機としたものである。

【００２９】このように請求項１１記載の発明は、支持
台に支持される基台部とこの基台部の操作者が位置する
側と対向する側に上方に向けて突設した筐体部とからな
る本体筐体の前記筐体部の上部に、顧客が投入した各種
硬貨を受け入れる硬貨投入口、この硬貨投入口から投入
された硬貨を搬送する搬送手段、この搬送手段で搬送さ
れた硬貨が正規の硬貨であるか否かを識別する識別手
段、この識別手段で正規でないと判断された硬貨排除す
る排除手段を備えた搬送路を設け、前記基台部に前記搬
送路から搬送されてきた正規の硬貨を種別毎に収容する
硬貨収容部と、硬貨を種別毎に払い出す払出部と、この
払出部から払い出された硬貨を収容する収容皿とを設け
たことから、硬貨自動払出機を小型とするとともに縦型
としたことから設置スペースを小さくできるという作用
を有するものである。

【００３０】

【発明の実施の形態】つぎに、この発明の硬貨自動払出
機（以下単に硬貨払出機という）およびこの硬貨払出機
を用いたチェックアウト装置の実施の形態を図1ないし
図１３に基づいて説明する。

【００３１】図1は硬貨払出機を用いたチェックアウト
装置の操作者つまりキャッシャーが位置する側（以下操
作者側という）からみた斜視図であり、図2はその一部
をキャッシャー側と反対側つまり顧客が位置する側（以
下顧客側という）からみた斜視図である。

【００３２】図1に示すようにチェックアウト装置1
は、支持台2、硬貨払出機3、登録処理装置4および紙
幣出納機5などから構成されている。

【００３３】前記支持台2は、いわゆる机状に形成され
ているもので、上面部には凹状に形成され前記硬貨払出
機3および紙幣出納機5を収納載置する収納部2aおよ
び収納部2bが設けられており、また、操作者側は開放
され下方部は備品などを収納する収納空間2cとなって

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いる。また、前記支持台２の左右両側には、それぞれ商品あるいは商品を入れた収納篭を載置する載置台６および７がそれぞれ配置されており、図１において右側に配置された載置台７は、未登録商品を載置するものであり、左側の載置台６は登録処理がされた登録済商品を載置するものである。

【００３４】つぎに、前記硬貨払出機３は、比較的偏平な箱状に形成された基台部１０１と、この基台部１０１の操作者つまりキャッシャー側（以下操作者をキャッシャーともいう）と反対側の上面から上方に突出させて設けられた筐体部１１０とからなる本体筐体１００と、この本体筐体１００内に設けられた後述する搬送路２０、硬貨収容容器６０ａないし６０ｆ、払出手段などから構成されている。

【００３５】そして、この硬貨払出機３は前記基台部１０１を前記支持台２の収納部２ａに収納載置されて支持台２に支持されているものであり、また、支持された状態では、その上面および同様に収納部２ｂに収納支持された後に詳述する紙幣出納機５の上面は、前記載置台６および７の上面と面一となるようになっており、これら上面は商品の登録処理をする際に商品などを載置できるようになっている。

【００３６】そして、前記筐体部１１０は角柱状に形成され、図１において右側には前記硬貨払出機３の一部である硬貨投入口（以下単に投入口という）などが、また、左側には後に詳述する登録処理装置４が配設されているものである。

【００３７】つぎに、硬貨払出機３について説明する。この硬貨払出機３には前記投入口１０が設けられており、この投入口１０は、前記筐体部１１０の左側上部を直方体状に形成するとともに、その一部を前記筐体部１１０の顧客側の側面から突出させて形成した箱状部１１１の前記突出した一端側上部の部位に、上方を開口して形成されている。そして、前記投入口１０は筐体部１１０の顧客側の側面から突出させて設けられていることから、顧客の硬貨の投入が容易になるとともに、硬貨払出機３の横方向つまり図１における左右方向の寸法を小さくできるものである。

【００３８】また、前記は箱状部１１１の内部には、図３ないし図５に示すように搬送路２０が設けられている。そして、前記投入口１０の底部には、図に示すように駆動ローラ１５ａと従動ローラ１５ｂに懸架されて搬送ベルト１５が設けられており、この搬送ベルト１５は後述に詳述する前記搬送路２０に前記投入口１０から投入された硬貨Ｋを送り出すようになっている。また、投入口１０には前記搬送ベルト１５の回転方向下流側に整列ローラ１６が設けられており、この整列ローラ１６は、搬送ベルト１５との間に硬貨一枚を通過させる間隙を設けて配置されるとともに、搬送ベルト１５の搬送方向とは逆方向に回転するように駆動されるようになって

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おり、このことによって投入口１０から複数の硬貨が同時に投入されたとしても、各硬貨Ｋは一層一列に整列されて順次搬送路２０に送り出されるものである。

【００３９】また、前記投入口１０の両側には、図４に示すように互いに対向して配置された発光素子１４ａ、１４ａとこの発光素子１４ａ、１４ａからの光を受ける受光素子１４ｂ、１４ｂとからなり、投入口１０に硬貨が投入されたことを検出する投入検知手段１４が設けられており、この投入検知手段１４によって硬貨が投入されたことが検知されると、搬送ベルト１５、整列ローラ１６、後述する搬送路２０の搬送ベルト４０で形成される第一の搬送系Ｒ１が駆動されるようになっている。

【００４０】また、前記投入口１０には、図１ないし図３に示すように、スライド式の開閉蓋１１が設けられており、この開閉蓋１１は図示しない電磁石等からなる開閉手段によって動作するものであり、この開閉手段は後述する登録処理装置４の入力手段であるキーボード２１０またはスキャナー２２０からの最初の登録をするための信号つまり最初の商品情報の入力信号に同期して開閉蓋１１を開き、登録終了キーである締めキー２１４の操作によって生じるキー信号に同期して閉じるように動作するものである。つまり、前記開閉蓋１１は操作者の登録処理の開始と同時に開き、終了と同時に閉じるようになっているものである。このことによって、登録処理がされていないときに悪戯などにより異物などの投入を防止できるものである。

【００４１】つぎに、前記投入口１０の下流側に設けられている搬送路２０について説明する。

【００４２】この搬送路２０の搬送面２２は平坦面に形成されており、この搬送路２０の上流側には、硬貨Ｋの種別を識別する識別手段２３が配置されており、この識別手段２３で検知された各硬貨Ｋは供述する硬貨計数手段３５で計数されるようになっている。そして、前記識別手段２３で検知された硬貨の各種別と、前記硬貨計数手段３５で計数された各種別毎の硬貨の個数（以下枚数ともいう）とから後述するＣＰＵ９０などで構成される硬貨合計額算出手段（単に硬貨額算出手段という）によって硬貨の合計額が算出される。

【００４３】また、前記識別手段２３の下流側には、前記識別手段２３で識別された結果真正な硬貨でないつまり正規の硬貨でないとされた硬貨を排除する排除手段２４が設けられている。

【００４４】そして、前記識別手段２３は、硬貨の直径つまり外径を識別する外径検知手段３０（図３参照）によって構成されている。また、この外形検知手段３０は図３に示すように、前記搬送面２２に形成した孔２２ａの下方に配置された発光素子３０ａと孔２２ａの上方に配置された受光素子３０ｂとから構成されており、この外形検知手段３０は硬貨の外径の大きさによって前記孔２２ａを通過する光量すなわち受光素子３０ｂが受光す

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る光量が異なることから、この光量によって変化する電気的出力によって硬貨の外径を検知して種別を識別するようになっている。

【0045】つまり、各硬貨の外径は各硬貨によってすべて異なることから、この外径を検知することにより硬貨の種別を検知つまり識別ができるものである。なお、硬貨の識別は前記したように各硬貨の外径を検知することによってなされるものであるが、さらに識別を確実にしようとする場合は、外径検知手段30とともに、図示しないが硬貨の材質を検知する材質検知手段、5円硬貨および50円硬貨のように孔のある硬貨の孔を検知つまり識別する孔識別手段を設けるようにしてもよいものである。

【0046】なお、この実施の形態おいては、識別手段23として硬貨の孔を識別する図示しない孔識別手段が配置されており、この孔識別手段は外径識別手段30と同様搬送面22に設けた孔22c（図4参照）の上下に配置された図示ししない発光素子と受光素子とから構成されており、前記硬貨の孔の有無の識別は搬送される硬貨の孔を通過する光を受光素子によって検知することによってなされる。

【0047】そして、前記投入口10から投入され搬送路20を搬送される過程で識別手段23と硬貨計数手段35で計数された数とに基づいて前記硬貨額算出手段によって算出された硬貨の合計額は、図2に示すように前記筐体部110の上部に設けられた後述に詳述する前記登録装置4の顧客側の面に設けられた硬貨額表示器Hに表示されるようになっている。このように顧客が投入した硬貨の合計額が高価額表示器Hに表示されることから、顧客は投入した額を自ら確認できるものである。

【0048】また、前記排除手段24は、搬送面22に形成した排除孔22bの図4において搬送方向左側から排除孔22bに常時所定幅突出するようにして配置されたシャッターSによって構成されており、排除孔22bから排除された正規でない硬貨は前記筐体部110の内部に下方に沿って形成された連通路24a（図5参照）を通って筐体部110の右側の側壁の側方に設けられた排除皿12aに排出されるようになっている。つまり、前記外径識別手段30および孔識別手段23によって正規の硬貨でないと識別された場合、前記シャッターSは排除手段コントローラ95f（図9参照）の制御によって動作する図示しない電磁石によって、前記突出した部分を右側に没入させて搬送されてきた硬貨を前記排除孔22bから前記は排除皿12aに落下させて排出させるようになっている。

【0049】このように、顧客が投入した硬貨の中に正規でない硬貨が混入している場合は、前記排除皿12aに落下つまり排出されることから、顧客は自己が投入した硬貨の中に正規な硬貨以外のものが混入していたことを自ら確認できるため、操作者との間に生じるトラブル

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などを解消できるとともに、不正行為を未然に防止できるものである。

【0050】また、前記搬送面22の前記排除孔22bの下流に位置して、正規の硬貨を通過させる硬貨通過孔22dが形成されており、この硬貨通過孔22dを通過した硬貨は、筐体部110の内部に下方に沿って設けられた連通路24b（図5、図6参照）を通って後述する硬貨を一時的に収納する収納部としての収納容器70に収納されるようになっている。

【0051】また、前記搬送路20には、搬送面22と対向させて配設され前記投入口10から送り込まれた硬貨K（図4参照）を搬送する搬送手段としての搬送ベルト40が駆動ローラ41aと従動ローラ41bに懸架されて配設されている。そして、この搬送ベルト40は硬貨Kの上面に圧接しつつ回転するようになっており、このことによって搬送路20に送り込まれた硬貨Kは、基準面21（図4参照）に沿って搬送面22を滑りつつ搬送され、前記硬貨通過孔22dを通過して前記収納容器70内に落下し収納されるものである。

【0052】また、前記連通路24bの互いに対向する側壁の上方部には、図2、図5に示すように互いに対向する貫通孔24cが形成されており、この貫通孔24cの外側には投入された正規の硬貨を検知する発光素子および受光素子からなる検知センサー35aが設けられている。そして、この検知センサー35aと図示しないカウンタとで前記硬貨計数手段35（図9参照）を構成しているものである。

【0053】そして、前記収納容器70は図5、図6に示すように上方を開口した箱状に形成されており、その底壁71はヒンジ73a（図6参照）を中心に回動し底部を開放するようになっており、底壁71が回動すると内部に一時的に収納された硬貨は後述する整列送出部25に落下するようになっている。

【0054】また、前記収納容器70の前記筐体部110の顧客側の側壁には開口72が形成されており、この開口72は上方部をヒンジ73bによって回動する蓋体74によって開閉できるようになっている。また、この蓋体70に対向する前記筐体部110の顧客側の側壁には図2、図5に示すように開口112が形成されており、この開口112は、図示しないヒンジによって回動可能に取り付けられた開閉扉113によって開閉されるようになっている。この開閉扉113の図示しないヒンジが設けられた側と反対側には、図2に示すように操作者がキーを用いて施錠または開錠できる錠114が取り付けられている。

【0055】そして、前記開閉扉113を開け、ついで前記収納容器70の蓋体74を開けることにより、収納容器70に一時的に収納されている硬貨を取出して、その金種および金額等を確認できるようになっている。つまり、顧客が投入口10から投入し、前記硬貨額表示器

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Hに前記硬貨額算出手段で算出された硬貨額が表示され、その金額が顧客が投入したと認識している硬貨額と異なっている旨の申し出があったとき、操作者は前記錠を開錠して開閉扉１１３および蓋体７４を開け、収容容器７０に収納されている硬貨の金額を確認できるようになっているものであり、このことによって、顧客との間に生じるトラブルを解消つまり防止できるとともに、顧客との信頼関係の維持ができるものである。

【００５６】また、前記収納容器７０の底壁７１は、硬貨が収納されてから所定の時間経過すると開くようになっており、この底壁７１が開くと収納されていた硬貨は硬貨を整列させて送出する前記整列送出部２５に落下する。

【００５７】この整列送出部２５は、図６に示すように前記台部１００の下面側に設けられた収納部１０２に収納された基台部１０１内に設けられているものであり、また、その構成は前記投入口１０と略同様な構成となっている。つまり、その底部に図６に示すように駆動ローラ４４ａと従動ローラ４４ｂとに懸架されて搬送ベルト４４が設けられており、この搬送ベルト４４は後述する選別搬送路２６に前記落下した硬貨を送り出すようになっている。また、整列送出部２５の搬送ベルト４４の回転方向下流側には整列ローラ４５が設けられており、この整列ローラ４５は搬送ベルト４４との間に硬貨一枚を通過させる間隙を設けて配置されるとともに、搬送ベルト４４の搬送方向とは逆方向に回転するように駆動されるようになっており、このことによって整列送出部２５に複数の硬貨が同時に落下したとしても、各硬貨は一層一列に整列されて順次選別搬送路２６に送り出されるものである。

【００５８】また、整列送出部２５には、収容容器７０から落下してくる硬貨を検知する受入センサー２５ｅ（図９参照（図５、図６では不図示））が設けられている。

【００５９】つぎに、前記選別搬送路２６について説明する。

【００６０】この選別搬送路２６は後述する硬貨収容部６０ａないし６０ｆなどとともに前記台部１００の下面側に設けられた収納部１０２に収納された基台部１０１内に設けられているものである。そして、この選別搬送路２６の搬送面２７は図８に示すように平坦面に形成されており、また、この選別搬送路２６には、硬貨選別手段５０が設けられている。

【００６１】この硬貨選別手段５０は図７において右側から順に外径の小さい硬貨を通過させて搬送面２７の下方に形成した後に詳述する前記硬貨収容部６０ａないし６０ｆに落下させる選別孔５１ａないし５１ｆによって構成されている。

【００６２】つまり、図７において一番右側つまり整列送出部２５側の選別孔５１ａは最も外径の小さい１円硬

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貨の選別孔であり、つぎの選別孔５１ｂは１円硬貨よりも外径の大きい５０円硬貨の選別孔であり、同様に選別孔５１ｃは５０円硬貨よりも外径の大きい５円硬貨の選別孔であり、選別孔５１ｄは５円硬貨よりも外径の大きい１００円硬貨の選別孔であり、選別孔５１ｅは１００円硬貨よりも外径の大きい１０円硬貨の選別孔であり、そして最も左側に位置している選別孔５１ｆは１０円硬貨よりも外径の大きい５００円硬貨の選別孔となっているものである。

【００６３】また、前記選別搬送路２６には、搬送面２７と対向させて配設された前記搬送ベルト４４によって送り込まれてきた硬貨５を搬送する搬送ベルト４７が駆動ローラ４８ａと従動ローラ４８ｂに懸架されて配設されている。そして、この搬送ベルト４７は硬貨の上面に圧接しつつ回転するようになっており、このことによって選別搬送路２６に送り込まれた硬貨は、基準面２７ａに沿って送面２７上を滑りつつ搬送されるものである。

【００６４】そして、搬送の過程において各硬貨は、この硬貨を選別する選別孔の位置に搬送されたときに、この選別孔から下方に落下しこの硬貨を収容する前記硬貨収容部６０ａないし６０ｆに収容されるようになっている。

【００６５】なお、前記整列送出部２５の搬送ベルト４４、整列ローラ４５および選別搬送路２６の搬送ベルト４７は第二の搬送系Ｒ２を構成しているものである。

【００６６】また、前記ケース３ａの前部には、後述する払出ベルト６２を構成する第二の払出ベルト６２ｂによって払い出された各種硬貨を収容する上方を開口した収容皿１２が設けられており、この収容皿１２には、各硬貨収容部６０ａないし６０ｆに対応して前記払出ベルト６２ｂの下流側に設けられた払出口１３ａないし１３ｆから払い出された各種硬貨を収容するようになっている。

【００６７】つぎに、前記硬貨収容部６０ａないし６０ｆおよび硬貨を払出す構成について説明する。なお、硬貨収容部６０ａないし６０ｆおよび硬貨を払出す構成は同一構造であるので、その内の硬貨収容部６０ｆに関連する部分についてのみ説明し他はその説明を省略する。

【００６８】硬貨収容部６０ｆの底部には、図８に示すように払出手段を構成する払出ベルト６２が配設されており、この払出ベルト６２は短い第一の搬送ベルト６２ａと長い第二の払出ベルト６２ｂとから構成されている。そして、第一の払出ベルト６２ａは駆動ローラ６３と従動ローラ６４とに懸架されるとともに、その前部は硬貨収容部６０ｆから外側に延出されている。また、第二の払出ベルト６２ｂは前記駆動ローラ６３と払出口１３ｆの近傍に設けられた従動ローラ６５とに懸架されている。

【００６９】そして、この第二の払出ベルト６２ｂは硬貨収容部６０ｆから外側に延出して払出口１３ｆにまで

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延出されており、また、前記第一の払出ベルト６２ａと第二の払出ベルト６２ｂ、すなわち払出ベルト６２は硬貨を払出口１３ｆに向けて搬送する方向に回転するようになっているものである。

【００７０】また、硬貨収容部６０ｆの出口には、払出ベルト６２である前記第一の払出ベルト６２ａと第二の払出ベルト６２ｂとに対向して整列ローラ６６が設けられており、この整列ローラ６６は払出ベルト６２の回転方向と逆方向に回転し、払出ベルト６２によって払出口１３ｆに向けて搬送される際に硬貨を一層一列に整列させるように機能するようになっている。

【００７１】また、第二の払出ベルト６２ｂの下流側つまり払出口１３ｆの手前近傍の部位には、第二の払出ベルト６２ｂと対向して電磁石８０の動作によって軸８１ａを支点とするとともに先端部に係止片８１ｂによって搬送されてきた硬貨の移動を停止する規制部材８１が配設されている。なお、前記電磁石８０と規制部材８１とは規制手段８３を構成するもので、この規制手段８３はＣＰＵ９０（図９参照）によって制御される後述する規制手段コントローラ９５ｃの制御によって動作するものである。

【００７２】そして、前記電磁石８０は後に詳述する登録処理装置４からの釣銭情報に基づく所定枚数の硬貨が払い出された際に、前記規制手段コントローラ９５ｃによって制御され、前記規制部材８１を動作させて、前記所定枚数を超えた硬貨の払い出しを停止するものである。

【００７３】そして、払出ベルト６２のうちの第二の払出ベルト６２ｂによって、払出口１３ｆまで搬送された硬貨Ｋは前記収容皿１２内に落下つまり払出されるものである。

【００７４】また、前記規制手段８３の近傍には、払出される硬貨を検知する検知センサー８４が設けられており、この検知センサー８４と図示しないカウンタとで払出計数手段８５ａないし８５ｆが構成されている。

【００７５】また、基台部１０１の下方つまり前記硬貨収容部６０ａないし６０ｆの下側には、図５、図６および図８に示すように、硬貨収容部６０ａないし６０ｆに収納された各硬貨を回収する回収容器８が引き出し可能に設けられている。そして、この回収容器８への硬貨の回収は、図８に示す案内板１７を軸１７ａを中心に二点鎖線で示す位置とし、この状態で前記払出ベルト６２を駆動することにより、払出口１３ａないし１３ｆから払出された硬貨は前記案内板１７の裏面に案内されて回収容器８内に落下し、このことによって、硬貨収容部６０ａないし６０ｆに収納された各硬貨は前記回収容器８に回収できるようになっている。

【００７６】つぎに、硬貨払出機３の主要の制御構成を図９の制御ブロック図に基づいて説明する。

【００７７】図に示すように演算回路を内臓したＣＰＵ

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（中央処理装置）９０には、バスライン９１を介して各種制御プログラムを格納するＲＯＭ（リード・オンリー・メモリ）９２と各種情報つまりデータを格納するＲＡＭ（ランダム・アクセス・メモリ）９３が接続されてり、前記ＣＰＵ９０は前記ＲＯＭ９２に格納された各種の制御プログラムに従って各種の制御および各種演算などの処理を実行するものである。

【００７８】また、図に示すようにバスライン９１は、Ｉ／Ｏポート９４ａを介して識別手段２３、Ｉ／Ｏポート９４ｂを介して投入検知手段１４、Ｉ／Ｏポート９４ｃを介して硬貨計数手段３５、Ｉ／Ｏポート９４ｄを介して計時手段９７が、Ｉ／Ｏポート９４ｅを介して受け入れセンサー２５ｅが、Ｉ／Ｏポート９４ｆを介して払出計数手段８５ａないし８５ｆが接続されている。また、バスライン９１には硬貨額表示器Ｈを制御する表示器コントローラ９５ａ、払出手段（払出ベルト６２）を制御する払出手段コントローラ９５ｂ、規制手段８３を制御する規制手段コントローラ９５ｃ、第一の搬送系Ｒ１を制御する第一の搬送系コントローラ９５ｄ、第二の搬送系Ｒ２を制御する第二の搬送系コントローラ９５ｅ、排除手段２４を制御する排除手段コントローラ９５ｆ、硬貨合計額情報を後述する登録処理装置４に出力する出力手段および登録処理装置４からの釣銭情報を受け入れる釣銭情報入力手段としての伝送Ｉ／Ｆ９６が接続されている。

【００７９】そして、前記ＲＡＭ９３には硬貨合計額格納手段である合計額格納エリア９３ａ、後述する登録処理装置４から送信された釣銭情報つまり硬貨で支払う釣銭額を格納する釣銭情報格納手段としての釣銭情報格納エリア９３ｂが設けられている。

【００８０】つぎに、硬貨払出機３の動作について説明する。

【００８１】顧客は買い物後の買上代金の精算の際に、合計額に小銭つまり硬貨が必要である場合、あるいは多数の硬貨を所持している場合に代金の一部を硬貨で支払うこと所望する場合には、所持している硬貨をあらかじめつまりキャッシャーが登録操作をしている間に、前記開閉蓋１１が開いている前記投入口１０に投入する。

【００８２】硬貨が投入されると前記投入検知手段１４が投入されたことを検知し、この検知がされるとＣＰＵ９０は前記第一の搬送系コントローラ９５ｄに第一の搬送系Ｒ１つまり搬送ベルト１５、整列ローラ１６および搬送ベルト４４を動作させて、投入された各種硬貨Ｋを一層一列に整列して搬送路２０を介して前記一時収納部７０に向けて搬送する。

【００８３】そして、搬送路２０を搬送される過程で前記識別手段２３で硬貨の種別が識別されるとともに、硬貨通過孔２２ｄを通過した正規の硬貨は前記硬貨計数手段３５で計数され、この硬貨の種別と計数結果に基づいて投入された硬貨の合計額がＣＰＵ９０つまり硬貨額算

出手段によって算出され、この合計額は前記ＲＡＭ９３
に設けられた合計額格納エリア９３ａに格納され、ま
た、この合計額格納エリア９３ａに格納された合計額
は、前記硬貨額表示器Ｈに表示される。また、前記合計
額は伝送Ｉ／Ｆ９６を介して登録処理装置４に送られ
る。

【００８４】また、前記識別手段２３で識別できない硬
貨は正規の硬貨でないとして前記排除手段２４によって
排除されて排出皿１２ａに排出される。このことによっ
て正規でない偽硬貨などが使用されることを防止ができ
るものである。

【００８５】そして、前記識別された各硬貨は前記硬貨
通過孔２２ｄから前記一時収納部である収納容器７０に
収納され、前記連通路２４ｂの前記硬貨通過孔２２ｄの
下方近傍に設けた前記検知センサー３５ａによって硬貨
の落下が終了つまり投入口１０から投入された硬貨がす
べて収納容器７０に収納されたと判断されてから、所定
時間が前記計時手段９７によって計時されると底壁７１
が開き、収納容器７０に収納された硬貨は整列送出部２
５に落下する。

【００８６】この落下は受入センサー２５ｅで検知さ
れ、この受入センサー２５ｅの検知信号に基づいてＣＰ
Ｕ９０は、第二の搬送系Ｒ２つまり搬送ベルト４４、整
列ローラ４５および搬送ベルト４７を動作させる。

【００８７】このことによって、整列送出部２５内の各
硬貨は整列ローラ４５によって一層一列に整列されて順
次選別搬送路２６に送り出され、種別毎に選別されて硬
貨収容部６０ａないし６０ｆのうちの所定の硬貨収容部
に収納される。

【００８８】そして、後述するように登録処理部４から
釣銭情報つまり釣銭額を伝送Ｉ／Ｆ９６を介して受信す
ると、この釣銭額は釣銭情報格納エリア９３ｂに格納さ
れ、この釣銭額に基づいてＣＰＵ９０は、この釣銭額を
構成する硬貨の種別と枚数つまり釣銭情報を決定し、こ
の釣銭情報は前記釣銭情報格納エリア９３ｂに格納さ
れ、この釣銭情報に基いて前記釣銭に要する種類の硬貨
が収納されている硬貨収納部の払出手段である払出ベル
ト６２を動作させて硬貨を払出口１３ａないし１３ｆを
介して収容皿１２に払い出される。

【００８９】なお、ＣＰＵ９０は、釣銭の硬貨の種別と
枚数つまり個数を決定する決定手段を構成しているもの
である。

【００９０】また、前記払出ベルト６２の第二の払出ベ
ルト６２ｂで搬送される過程で、硬貨は払出計数手段８
５ａないし８５ｆで計数され、所定の枚数が計数される
とＣＰＵ９０は前記規制手段８３を動作させて搬送され
る硬貨の払出口１３ａないし１３ｆからの払出を停止す
る。このことによって、所定の硬貨の釣銭が収容皿１２
に払い出され、操作者つまりキャッシャーは、この収容
皿１２に収容されている硬貨と、釣銭に紙幣が含まれて

いるときは後述する紙幣出納機５から払い出された釣銭
としての紙幣とともに顧客に渡すものである。

【００９１】なお、前記硬貨の種別と枚数は払い出す硬
貨の枚数が最小になるように決定される。つまり、釣銭
の額が例えば５７０円である場合は、５００円硬貨１枚
（１００円硬貨５枚ではなく）と５０円硬貨一枚（１０
円硬貨五枚ではなく）と１０円硬貨二枚と決定されるよ
うになっている。

【００９２】つぎに、登録処理装置４について説明す
る。

【００９３】この登録処理装置４は、図１および図２に
示すように前記筐体部１１０の上部に配置されており、
その上面の操作者側には、この登録処理装置４の入力手
段の一つであるキーボード２１０が配置されている。こ
のキーボード２１０には、図１および図２に示すように
販売商品の販売金額などを置数する置数キー２１１、商
品の分類を示す部門キー２１２、小計キー２１３、登録
終了キーである現金決済つまり精算をする預／現計キー
（以下締めキーという）２１４、各種のファンクション
キー２１５が配列されている。また、このキーボード２
１０には電源のオン・オフ制御を行うとともに「登録」
（顧客の買上た商品の販売データを累計処理するととも
にレシートを発行する業務）「点検」（登録業務によっ
て累計された商品販売データをレポート出力する業
務）、「精算」（登録業務によって累計された商品販売
データをレポート出力するとともに、記憶部の内容をク
リアーする業務）など各種業務の選択および設定をする
モード設定キー２１６が設けられている。

【００９４】また、この登録処理装置４は入力手段とし
ての周知の光学的読取装置（以下スキャナーという）２
２０（図１０参照）を備えており、このスキャナー２２
０は前記筐体部１１０に配置されるとともに、その読取
窓２２１は前記筐体部１１０の操作者と対向する面に配
置されている。なお、このスキャナー２２０は、レーザ
ー発信器から出射されたレーザー光をポリゴンミラーお
よび反射ミラーを用いて商品に付されたバーコード上を
走査させ、その反射光を受光素子で受けてバーコードが
有する商品情報を読み取る一般にレーザースキャナーと
呼ばれてい読取装置である。

【００９５】このスキャナー２２０は、図示しないが前
記筐体部１１０内に弾性ゴムなどからなる防振材を介し
て配置されており、このことによって、硬貨払出機３が
動作する際に発生する振動が伝達されるのを防止し、こ
の振動に起因する故障などの発生を防止できるものであ
る。

【００９６】また、スキャナー２２０を筐体部１１０内
に配置することによって、筐体部１１０の内部のスペー
スを有効に活用して登録処理装置４の小型化が図れるも
のである。また、スキャナー２２０の読取窓２２１を筐
体部１１０の操作者側の面に配置したことから、商品に

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付されたバーコードを読み取らせることによって登録操作が容易となるものである。

【００９７】また、前記キーボード２１０の図１において左側には、操作者用の表示器２３０が設けられており、また、顧客側の面には図２に示すように前記硬貨額表示器Ｈに隣接して顧客用の表示器２３１が設けられている。また、前記表示器２３０の下側にはレシート発行口２３４が設けられており、このレシート発行口２３４からはプリンタ２３５（図１０参照）で所定の事項が印字されたレシートが発行されるようになっている。

【００９８】つぎに、登録処理装置４の制御構成を図１０に示す制御ブロック図に基づいて説明する。

【００９９】この制御構成は同図に示すように、演算回路を内蔵するとともにキーボード２１０などから入力された情報つまりデータに基づいて各種演算処理を行うＣＰＵ（中央処理装置）２４０、各種制御プログラムを格納するＲＯＭ（リード・オンリー・メモリ）２４１、キー入力された各商品の金額などの販売データを格納するＲＡＭ（ランダム・アクセス・メモリ）２４２、前記モード設定キー２１６からのキー信号を取り込むＩ／Ｏポート２１６ａ、前記キーボード２１０からのキー信号を取り込むキーボード回路２１０ａ、前記スキャナー２２０の信号を取り込むＩ／Ｏポート２２０ａ、前記表示器２３０および２３１に表示データを出力する表示器コントローラ２３０ａ、プリンター２３５に印字データを出力するＩ／Ｏポート２３６、硬貨払出機３と硬貨合計額、釣銭情報の送受信を行うための伝送Ｉ／Ｆ２４３、紙幣出納機５に釣銭情報を送信するための伝送Ｉ／Ｆ２４４等から構成されている。

【０１００】なお、前記伝送Ｉ／Ｆ２４３は合計額入力手段および釣銭情報出力手段を構成しているものである。

【０１０１】そして、前記ＲＯＭ２４１、ＲＡＭ２４２、Ｉ／Ｏポート２１６ａ、キーボード回路２１０ａ、Ｉ／Ｏポート２２０ａ、表示器制御回路２３０ａ、Ｉ／Ｏポート２３６、伝送Ｉ／Ｆ２４３、伝送Ｉ／Ｆ２４４はバスライン２４６を介してＣＰＵ９０に接続されている。

【０１０２】また、前記ＲＡＭ２４２には、各商品の販売データを格納する販売データ登録ファイル２４２ａ、一客の買上合計額を格納する格納手段としての合計額エリア２４２ｂ、キーボード２１０か入力された顧客か預かった紙幣額を格納する紙幣額エリア２４２ｃ、前記硬貨払出機３から受信した硬貨の合計額を格納する硬貨合計額各格納手段としての硬貨額エリア２４２ｄ、前記紙幣額エリア２４２ｃに格納された紙幣額と硬貨額エリア２４２ｄに格納された硬貨額との合計額つまり顧客から預かった総預金額を格納する総預額格納手段としての総預額エリア２４２ｅ、この総額エリア２４２ｅに格納された総預額がら前記合計額エリア２４２ｂに格納された

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買上合計額とから求めた釣銭額つまり釣銭情報を格納する釣銭情報格納手段としての釣銭情報格納エリア２４２ｆなどが設けられている。

【０１０３】つぎに、この登録処理装置４の動作について説明する。

【０１０４】顧客が買上げた商品を登録処理装置４が設置されて精算場所に持ってくると、操作者つまりキャッシャーは前記、キーボード２１０から商品の価格等の情報を入力する。この入力に基づいてＣＰＵ２４０によってこの顧客つまり一客の買上合計額が算出されるとともに、この合計額を前記合計額エリア２４２ｂに格納される。また、この合計額は表示器２３０および２３１に表示される。

【０１０５】そして、この顧客は前記買上代金のうちの端数金額、またはこの買上代金の一部を硬貨によって支払うことを所望するときは、キャッシャーが登録操作をしている間に予め前記硬貨払出機３の投入口１０に硬貨を投入するものであり、そして投入された場合は投入された硬貨の合計額は硬貨払出機３によって算出され、この合計額は前記伝送Ｉ／Ｆ２４３を介して送信され前記硬貨額エリア２４２ｄに格納されている。

【０１０６】そして、登録操作が終わり前記表示器２３０に表示された合計額に基づいてキャッシャーは顧客から紙幣を預かり、この預かった紙幣の金額をキーボード２１０から入力すると、この紙幣額は前記紙幣額エリア２４２ｃに格納される。ついで、この紙幣額エリア２４２ｃに格納された紙幣額と前記硬貨額エリア２４２ｄに格納されている硬貨額とから総預額が求められ、この総預額は前記総額エリア２４２ｅに格納される。ついで、この総預額と前記合計額エリア２４ｂに格納されている買上合計額とか釣銭額が求められ、また、この釣銭額のうちの紙幣に係る額と硬貨に係る額とが求められ、これらは前記釣銭情報エリア２４２ｆに格納される。

【０１０７】そして、前記釣銭情報のうち硬貨に係る釣銭情報は前記伝送Ｉ／Ｆ２４３を介して硬貨払出機３に送信される。また、紙幣に係る釣銭情報は後述する紙幣出納機５に送信される。

【０１０８】そして、登録操作が終了しキャッシャーが締めキー２１４を操作すると、前記買上合計額および釣銭額などが表示器２３０および２３１に表示されるとともに、プリンター２３５によって、商品名、金額、買上点数、消費税額、合計額など所定の事項が印字されたレシートがレシート発行口２３４から発行される。

【０１０９】つぎに、紙幣出納機５について説明する。この紙幣出納機５は図１１および図１２に示すように、箱状に形成されるとともに内部に紙幣回収室（以下回収室という）３０１、紙幣収納室（以下収納室という）３０２などが形成された筐体３００と、この筐体３００内に配設された入金識別部３１０、出金識別部３２０などから構成されてる。

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【０１１０】なお、この紙幣出納機５は図１に示すように、支持台２の収納部２ｂに収納載置された状態では、その一部は筐体部１１０の下側に入り込むようになっている。

【０１１１】そして、図１２に示すように前記筐体３００の前側の上方には紙幣挿入口（以下挿入口という）３０３が形成され、下方には紙幣送出口（以下送出口という）３０４が形成されており、この送出口３０４と前記挿入口３０３とは前記回収室３０１の上下壁によって区画されている。なお、前記送出口３０４の前部には払出された紙幣Ｐを位置決めして落下させないようにするための一対係止爪３０４ａが離間して設けられている。

【０１１２】そして、前記収納室３０２は図１１に示すように、投入された千円、五千円、一万円札を共通の搬送路３３１によって、ランダムに一旦収納する収納室となってる。

【０１１３】また、紙幣搬送路は収納室３０２に収納搬送するための搬送路３３１、前記収納室３０２から釣銭として紙幣を払出すための搬送路３３１ａ、出金されない紙幣を元に戻すための循環搬送路３３３および高額紙幣（一万円札（設定によっては五千円札も））を回収室３０１に回収するための搬送路３３２を有している。これら各搬送路は図示しない切替手段（切替ゲートなど）によって動作する搬送手段が、出金識別部３２０での識別結果に基づき、指定枚数の紙幣の出金が終了するまで収納室３０２の紙幣を送出口３０４に送出したり、不要の紙幣例えば五千円紙幣を収納室３０２に戻したり、高額紙幣を回収室３０１に回収したりする循環動作を繰り返しながら指定金額を送出口３０４に送出した後動作を停止する。

【０１１４】なお、四千円以下の釣銭は千円札で、五千円以上の釣銭は五千円札と千円札とによって出金される。

【０１１５】また、前記回収室３０１の前面は開口されており、この開口から収納容器３４０が引き出し可能に設けられており、この回収容器３４０は前面部に錠３４１（図１参照）設けられており、この錠３４１を開錠することによって引き出せるようになっている。また、この回収容器３４０には一万円札が収納されるものである。つまり、一万円札は釣銭としては使用することがないことから、顧客が支払った一万円札はこの回収容器３４０に回収するものである。

【０１１６】なお、前記各搬送路３３１、３３２および３３３には、それぞれ紙幣を搬送するローラあるいはベルトなどからなる搬入搬送手段（図１１および図１２では不図示）３３５（図１３参照）が設けらており、また、払出搬送路３３１ａにも同様にそれぞれローラあるいはベルトなどからなる払出搬送手段（図１２および図１３では不図示）３３６（図１３参照）が設けられている。

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【０１１７】また、挿入口３０３の入口の近傍上壁に配置された入金識別部３１０は、挿入口３０３から挿入された紙幣の種別を識別する識別手段で構成されており、この識別部３１０で識別された紙幣は、これら紙幣をそれぞれ搬送する搬送路３３１を介して前記収納室３０２あるいは回収室３０１へ搬送され収納または回収されるものである。

【０１１８】また、図１２に示すように払出搬送路３３１ａには、出金識別部３２０が設けられており、この出金識別部３２０はそれぞれ、千円札および五千円札および一万円札を識別する識別手段で構成されており、払い出される札がそれぞれ千円札であるか五千円札または一万円札であるかどうかを識別するものである。

【０１１９】また、払出搬送路３３１ａには、出金識別部３２０の直ぐ下流側に位置して、払い出される紙幣の枚数を計数する計数手段３２１が設けられており、この計数手段３２１が釣銭として払い出す各紙幣を所定枚数計数したときは、つぎに説明する送出手段３２２および前記払出搬送手段３３６は停止されるものである。

【０１２０】また、前記収納室３０２の底部には紙幣を一枚づつ送出す送出手段３２２が設けられ、また、前記挿入口３０１には紙幣が挿入れたことを検知する検知手段３２３が設けられている。また、前記筐体３００の内部には電源装置３０６および図示しない制御装置が収納されている。

【０１２１】つぎに、この紙幣出納機５の制御構成を図１３に基づいて説明する。

【０１２２】この制御構成は同図に示すように、演算回路を内臓するＣＰＵ（中央処理装置）３５０、各種制御プログラムを格納するＲＯＭ（リード・オンリー・メモリ）３５１、釣銭情報などを格納するＲＡＭ（ランダム・アクセス・メモリ）３５２、前記登録処理装置４からの釣銭情報を取り込む伝送Ｉ／Ｆ３５３、前記入金識別部３１０から識別情報を取り込むＩ／Ｏポート３５４ａ、前記出金識別部３２０からの識別情報を取り込むＩ／Ｏポート３５４ｂ、計数手段３２１からの情報を取り込むＩ／Ｏポート３５４ｃ、挿入検知手段３２３からの検知信号を取り込むＩ／Ｏポート３５４ｄ、搬入搬送手段３３５を制御する搬入搬送手段駆動回路３５６、払出搬送手段３３６を制御する払出搬送手段駆動回路３５７、送出手段３２２を制御する送出手段駆動回路３５８などから構成されている。

【０１２３】そして、前記ＲＯＭ３５１、ＲＡＭ３５２、伝送Ｉ／Ｆ３５３、Ｉ／Ｏポート３５４ａ、Ｉ／Ｏポート３５４ｂ、Ｉ／Ｏポート３５４ｃ、Ｉ／Ｏポート３５４ｄ、搬入搬送手段駆動回路３５６、払出搬送手段駆動回路３５７、送出し駆動回路３５８はバスライン３５９を介してＣＰＵ３５０に接続されている。

【０１２４】そして、前記ＲＡＭ３５２には、前記登録処理装置４から送信されてきた釣銭情報を格納する紙幣

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釣銭情報エリア352aなどが設けられている。

【0125】つぎに、この紙幣出納機5の動作について説明する。

【0126】顧客が買上げた商品の買上代金の支払つまり精算時に、前記を登録処理装置4によって登録処理がされ、この顧客の買上合計額が前記表示器230に表示されると、顧客はこの表示された代金のうちの紙幣で支払う額に相当する紙幣を操作者つまりキャッシャーに渡す。キャッシャーは受け取った紙幣の金額を前記キーボード210から入力すると、登録処理装置4では、予め前記硬貨払出機3の投入口10から硬貨が投入されいる場合は、この硬貨の額と前記入力された紙幣の額との合計額つまり総預額が求められ、この総預額と前記買上合計額とから釣銭額が求められる。この釣銭額のうちの紙幣に係る釣銭額つまり釣銭情報は紙幣出納機5に送信され、この釣銭情報は前記紙幣釣銭情報エリア352aに格納される。

【0127】釣銭情報エリア352aに釣銭情報が格納されると、CPU350によりこの釣銭額を構成する紙幣の種別と枚数が算出され、この種別と枚数が前記釣銭情報エリア352aに格納され、そして、紙幣の種別に応じてこの紙幣を払い出す送出手段322および払出搬送手段357を駆動し紙幣の払出を開始し、前記払い出された紙幣が前記計数手段321によって所定枚数計数されると前記送出手段322を停止させ、所定枚数を超えた紙幣の送出しを停止しする。そして、払い出された紙幣は前記送出搬送手段336によって送出口304に送出され、送出しが終了すると払出搬送手段336は停止し、この時釣銭に必要な紙幣は送出口304に払い出されるようになっている。

【0128】また、キャッシャーは顧客から預かった紙幣の金額の入力が終わると、この紙幣を前記挿入口301に挿入する。すると前記検知手段323によりこの挿入が検知され、この検知がされると前記搬入搬送手段335が動作し、紙幣は内方に向かって搬送され、この過程で前記入金識別部310によって正規の紙幣かどうかが識別され収納室302に回収される。なお、前記収納室302に収納された千円札および五千円札は循環しながら再び釣銭として使用されるようになっている。

【0129】つぎに、上記チェックアウト装置1つまり登録処理装置4、硬貨払出機3および紙幣出納機5の全体の動作について説明する。

【0130】上述したように、顧客は商品の購入が終わると、買上げた商品を入れた収納篭を、前記未登録商品を載置する載置台106に置く。操作者つまりキャッシャーは前記商品の価格等の情報をそれぞれ入力手段であるスキャナー220およびキーボード210によって登録つまり入力する。この入力に基づいてCPU240によってこの顧客つまり一客の買上合計額が算出されるとともに、この合計額は前記合計額エリア242bに格納

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される。また、この合計額は表示器230および231に表示される。

【0131】一方、この顧客は前記買上代金のうちの端数金額が出ることを予測し、またはこの買上代金の一部を硬貨によって支払うことを所望するときは、キャッシャーが登録操作をしている間に予め前記硬貨払出機3の投入口10に硬貨を投入する。すると投入された硬貨の合計額は硬貨払出機3によって算出され、この合計額は前記伝送I／F96および伝送I／F243を介して登録処理装置4に送信され前記硬貨額エリア242dに格納される。

【0132】そして、登録操作が終わり前記表示器230に買上代金の合計額が表示され、この合計額に基づいてキャッシャーは顧客から紙幣を預かり、この預かった紙幣の金額をキーボード210から入力すると、この紙幣額は前記紙幣額エリア242cに格納される。ついで、この紙幣額エリア242cに格納された紙幣額と前記硬貨額エリア242dに格納されている硬貨額とから総預額が求められ、この総預額は前記総額エリア242eに格納される。ついで、この総預額と前記合計額エリア24bに格納されている買上合計額とから釣銭額が求められ、そして、この釣銭額から紙幣で支払う額と、硬貨で支払う額が求められ、これらは前記釣銭情報エリア242fに格納される。

【0133】そして、前記釣銭情報のうち硬貨に係る釣銭情報は前記伝送I／F243および伝送I／F96を介して硬貨払出機3に送信される。また、紙幣に係る釣銭情報は紙幣出納機5に送信される。

【0134】そして、登録操作が終了しキャッシャーが締めキー214を操作すると、前記買上合計額および釣銭額などが表示器230に表示されるとともに、プリンターによって所定の事項が印字されたレーシートがレシート発行口2324から発行される。

【0135】また、硬貨払出機3は登録処理部4から釣銭情報つまり釣銭額を受信すると、この釣銭額は釣銭情報格納エリア93bに格納され、この釣銭額に基づいてCPU90は、この釣銭に必要な硬貨の種別と枚数つまり釣銭情報を決定し、この釣銭情報は前記釣銭情報格納エリア93bに格納され、この釣銭情報に基いて前記釣銭に要する種類の硬貨と枚数が収容皿12に払い出される。

【0136】また、紙幣出納機5は登録処理装置4から釣銭情報つまり釣銭額を受信すると、この釣銭額を前記釣銭情報エリア352aに格納し、この釣銭に必要な紙幣の種別と枚数つまり釣銭情報が決定され、この釣銭情報は前記釣銭情報エリア352aに格納され、この釣銭情報に基いて前記釣銭に要する種類の紙幣と枚数が送出口304に払い出される。

【0137】そして、キャッシャーは前記硬貨払出機3の収容皿12に払い出された硬貨と、紙幣出納機5の送

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出口304に紙幣を釣銭として顧客に渡すことにより精算処理は終了する。

【0138】また、登録処理装置3は前記登録データファイル242aに前記顧客の買上商品の金額、部門などを記録し、登録データファイル242aの内容を更新処理する。

【0139】このように上記チェックアウト装置1は、精算処理時においては、買上代金に端数が含まれることが一般的であることから、顧客は表示器230に合計額が表示されまで待つことなく、手持の硬貨を予め投入口10に投入することにより、この投入された硬貨の額が紙幣の額に加算され総預額が算出されて、この総預額と買上代金とから釣銭が求められ精算処理がされるものである。したがって、顧客は精算時に買上代金の合計額が表示器230に表示されてから、端数金額つまり硬貨釣銭に相当する硬貨を準備する必要がなく、キャッシャーは顧客が前記硬貨を準備する間待つ必要がないことから、精算処理が迅速になされ処理効率の向上が図れるものである。

【0140】また、釣銭はそれぞれ硬貨払出機3と紙幣出納機5によって算出されるものであることから、キャッシャーは釣銭である硬貨および紙幣を数えて準備する作業を必要としないことから処理効率の向上がはかれるとともに、キャッシャーの釣銭を数えるなどに起因する精神的負担が軽減されるものである。

【0141】また、投入口10は顧客側に突出していることから硬貨の投入が容易であるとともに、投入した硬貨の合計額を硬貨額表示器Hによって確認できることから、操作者との間に投入した額の食い違いなどのトラブルを防止できるものである。

【0142】また、登録装置装置4の登録処理とは独立して、硬貨払出機3の投入された硬貨の合計額の算出し、硬貨合計額格納エリアに格納するようにしたことから、登録処理中に硬貨を投入できるため、精算処理に要する時間を低減して、処理効率を向上させることができるものである。

【0143】また、投入された硬貨を一時的に収納容器70に収納するとともに、この収納容器70内に収納された硬貨の額を筐体部110の設けた開閉扉113を開放して確認できることから、顧客との間に生じるトラブルを防止できるものである。

【0144】また、精算時に顧客から預かった紙幣額をキーボード210が入力することに応じて、この紙幣額と投入された硬貨の合計額とに基いて総預額を算出するようにしたことから、自動的に総預額が求められることから精算処理の効率化が図られるものである。

【0145】また、スキャナー220を筐体部110の内部に配置するようにしたことから、登録処理装置4の小型化が図れ引いてはチェックアウト装置全体の小型化が図れるものである。また、スキャナー220は振防材

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を介して筐体部110の内部に配置したことから、硬貨払出機3の動作時に生じる振動に起因する故障などを防止できるものである。

【0146】また、投入口10に最初の商品情報入力つまり登録処理の入力信号に基いて開き、登録終了キーつまり締めキー214のキー信号によって閉じる開閉蓋11を設けたことから、登録処理時以外の時間に悪戯などによる異物が投入されることを防止できるものである。

【0147】また、硬貨払出機3は、本体筐体100を、基台部101とこの基台部101の上方に突出させて形成した筐体部110とにより側面からの投影を略L字状に形成し、これらに搬送路20、硬貨収容部60aないし60f、払出手段である払出ベルト62などを配分して配置する構成、つまり搬送路20の部分を筐体部110の上部に配置し、連通路24bを筐体部110の内部に縦方向に沿わせて配置し、硬貨収容部60aないし60fおよび払出ベルト62などを基台部1010内に配置する構成としたことから、硬貨払出機3の配置スペースを小さくできるものである。

【0148】なお、上記実施の形態においては、登録処理装置4を筐体部110に設ける構成としたが、これは登録処理装置を硬貨払出機3とは別体に従来周知のいわゆるスタンドアロン形式に形成し、この登録処理装置を台部2の上面に配置する構成としてもよいものである。

【0149】また、上記実施の形態においては、硬貨および紙幣の釣銭を構成する金種および枚数をそれぞれ硬貨払出機3および紙幣出納機5によって算出するようにしたが、これは登録処理装置4によって算出するようにしてもよいものである。

【0150】また、上記実施の形態においては、チェックアウト装置1を、登録処理装置4、硬貨払出機3および紙幣出納機5によって構成したが、これは精算処理業務において最も時間を要する要因が上述したように、硬貨釣銭の取り扱いに要する時間であることから、前記紙幣出納機5を省略してこの紙幣出納機5に替えて従来のドロワを設け、紙幣の取り扱いはこのドロワによって行なう構成としてもよいものである。このようにドロワを用いる構成とした場合のドロワの配置位置は、前記紙幣出納機5を配置した収納部2bに配置するようにすればよい。

【0151】また、上記実施の形態においては、硬貨払出機3を支持台2に設けた収納部2aに収納する、つまり支持台2と別体とした構成としたが、これは一体とする構成としてもよいものである。

【0152】また、上記実施の形態においては、硬貨を一時的に収納する収納容器70の底壁71の開放は、計時手段97によって所定の時間計時されたときになすようにしたが、これは収納容器70に収納さた時点ではこれら硬貨の合計額は既に算出されているものであり、また、釣銭硬貨は硬貨収容部60aないし60fに収納さ

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れて硬貨によって払出されるものであることから、締め
キー214の締め操作時のキー信号によって開放させる
ようにしてもよいものである。

【0153】

【発明の効果】上記のように請求項1記載の発明は、精
算処理時に顧客は硬貨を含めて買上代金の支払いをしよ
うとするときは、所持している硬貨を予め硬貨投入口に
投入することができ、この投入された硬貨の合計額が硬
貨合計額算出手段によって算出されるとともにこの合計
額は硬貨合計額格納手段に格納され、この硬貨の合計額
は、登録処理装置において登録処理装置の入力手段から
入力された顧客からの預り金額に合計され総預額が求め
られ、この総預額と買上合計額とに基づいて算出された
釣銭情報に基づいて、硬貨自動払出機によって必要な硬
貨の種類と個数を算出して釣銭として必要な硬貨の払い
出しをすることより、精算処理に要する時間を低減して
処理効率を高めることができるとともに正確な精算がで
き、また、操作者つまりキャッシャーの釣銭硬貨を数え
るなどに起因する精神的疲労の低減を図ることができる
という効果を有するものである。

【0154】また、請求項2記載の発明は、請求項1記
載の発明において、硬貨投入口を筐体部の操作者と対向
する面と反対側の顧客と対向する側に突出させて設けた
ことから、請求項1記載の発明の効果に加えて、顧客の
硬貨の投入を容易にすることができるという効果を有す
るものである。

【0155】また、請求項3記載の発明は、請求項1ま
たは請求項2記載の発明において、登録処理装置の入力
手段から入力された商品情報に基いてなされる登録処理
と独立して、硬貨自動選別払出装置の硬貨投入口に投入
された正規硬貨の合計額を算出し、この合計額を硬貨合
計額格納手段に格納することとしたことから、請求項1
または請求項2記載の発明の効果に加えて、硬貨投入口
から投入される硬貨の合計額の算出は、顧客の買上げた
商品情報の入力などの登録処理と独立してなされること
から、顧客は登録処理中に硬貨を投入口に投入すること
ができることから、更に精算処理の時間を低減できると
いう効果を有するものである。

【0156】また、請求項4記載の発明は、請求項1な
いし請求項3記載の発明において、顧客用の硬貨額表示
手段を設けこの硬貨額表示手段に硬貨合計額格納手段に
格納された硬貨の合計額を表示させることとしたことか
ら、請求項1ないし請求項3記載の発明の効果に加え
て、顧客は自己が硬貨投入口から投入した硬貨の合計額
を確認できるという効果を有するものである。

【0157】また、請求項5記載の発明は、請求項1な
いし請求項4記載の発明において、搬送路の下流にこの
搬送路で搬送されてきた硬貨を一時的に収納する収納部
を筐体部に設けるとともに、収納部に対応して操作者の
開操作によって開放可能状態となる開閉扉を前記筐体部

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の側壁に設けたことから、請求項1ないし請求項4記載の
発明の効果に加えて、顧客が投入した硬貨の合計額が自
己の投入した額と異っているときは、開閉扉を開けて収
納部に収納されている硬貨を確認できるという作用を有
するものである。また、開閉扉は操作者つまりキャッ
シャーの開閉操作にって開放可能状態となることから安全
性を確保できるという効果を有するものである。

【0158】また、請求項6記載の発明は、請求項1な
いし請求項5の発明において、筐体部の側壁に排除皿を
設けるとともに、搬送路に設けた識別手段の下流側に排
除手段を設け、前記識別手段によって正規でないと識別
され硬貨を前記排除皿に排出させることとしたことか
ら、請求項1ないし請求項5記載の発明の効果に加え
て、顧客は自己投入した硬貨の中に正規でない硬貨が混
入していたことを、顧客自身で確認できることから操作
者との間に生じるトラブルなどを防止できるという効果
を有するものである。

【0159】また、請求項7記載の発明は、請求項1な
いし請求項6記載の発明において、入力手段からの顧客
から預かった紙幣額の入力に応じて預かった紙幣額と前
記硬貨合計額格納手段に格納された硬貨合計額とに基づ
いて総預額を算出することとしたことから、請求項1な
いし請求項6記載の発明の効果に加えて、総預額は操作
者が顧客から預かった紙幣額の入力に応じて算出される
ことから、その算出を容易にすることができるという効
果を有するものである。

【0160】また、請求項8記載の発明は、請求項1な
いし請求項7記載の発明において、筐体部の操作者と対
向する面に光学的読取装置を配設したことから、請求項
1ないし請求項7記載の発明の効果に加えて、チェック
アウト装置を小型にできるとともに商品情報の登録操作
が容易であるという効果を有するものである。

【0161】また、請求項9記載の発明は、請求項8に
記載の発明において、光学的読取装置を防振材を介して
筐体部に配設したことから、請求項8記載の発明の効果
に加えて、硬貨自動払出機の動作中に生じる振動が光学
的読取装置に伝達されることを防止できことから、振動
に起因する故障などの発生を防止できるという効果を有
するものである。

【0162】また、請求項10記載の発明は、請求項1
ないし請求項8記載の発明において、硬貨投入口に入力
手段からの最初の商品情報入力情報に基づいて開き、登
録終了キーのキー信号によって閉じる開閉蓋を設けたこ
とから、請求項1ないし請求項8記載の発明の効果に加
えて、顧客の登録処理の開始から登録終了までの間以外
は硬貨投入口は開閉蓋によって閉蓋されているため、悪
戯などによる硬貨投入口への異物などの投入を防止でき
るという効果を有するものである。

【0163】また、請求項11記載の発明は、支持台に
支持される基台部とこの基台部の操作者が位置する側と

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対向する側に上方に向けて突設した筐体部とからなる本体筐体の前記筐体部の上部に、顧客が投入した各種硬貨を受け入れる硬貨投入口、この硬貨投入口から投入された硬貨を搬送する搬送手段、この搬送手段で搬送された硬貨が正規の硬貨である否かを識別する識別手段、この識別手段で正規でないと判断された硬貨排除する排除手段を備えた搬送路を設け、前記基台部に前記搬送路から搬送されてきた正規の硬貨を種別毎に収容する硬貨収容部と、硬貨を種別毎に払い出す払出部と、この払出部から払い出された硬貨を収容する収容皿とを設けたことから、硬貨自動払出機を小型とするとともに縦型としたことから設置スペースを小さくできるという硬貨を有するものである。

【図面の簡単な説明】

【図1】本発明の実施の形態のチェックアウト装置の全体斜視図（操作者側から見た斜視図）。

【図2】上記チェックアウト装置の部分視図（操作者と反対側から見た斜視図）。

【図3】上記チェックアウト装置の硬貨自動払出機の投入口部分の奥行き方向断面図。

【図4】上記チェックアウト装置の硬貨自動払出機の投入口部分の断面図（図3のA−A線での断面図）。

【図5】上記チェックアウト装置の硬貨自動払出機の奥行き方向断面図。

【図6】上記チェックアウト装置の硬貨自動払出機の横方向断面図。

【図7】上記チェックアウト装置の硬貨自動払出機の選別搬送路、払出手段（払出ベルト）を示した平面図。

【図8】上記チェックアウト装置の硬貨自動払出機の硬貨収容部から収容皿に硬貨払出す構成を示す断面図（図7におけるB−B線での断面図）。

【図9】上記チェックアウト装置の硬貨自動払出機の制御ブロック図。

【図10】上記チェックアウト装置の登録処理装置の制御ブロック図。

【図11】上記チェックアウト装置の紙幣出納機の平面図。

【図12】上記チェックアウト装置の紙幣出納機の断面

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図。

【図13】上記チェックアウト装置の紙幣出納機の制御ブロック図。

【符号の説明】

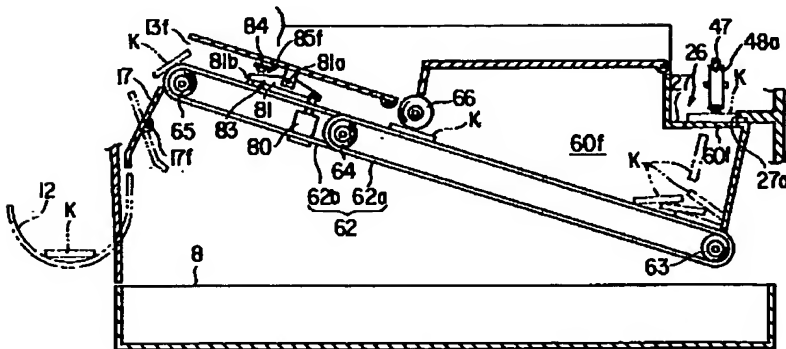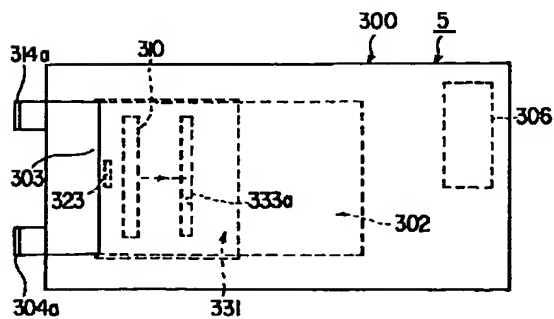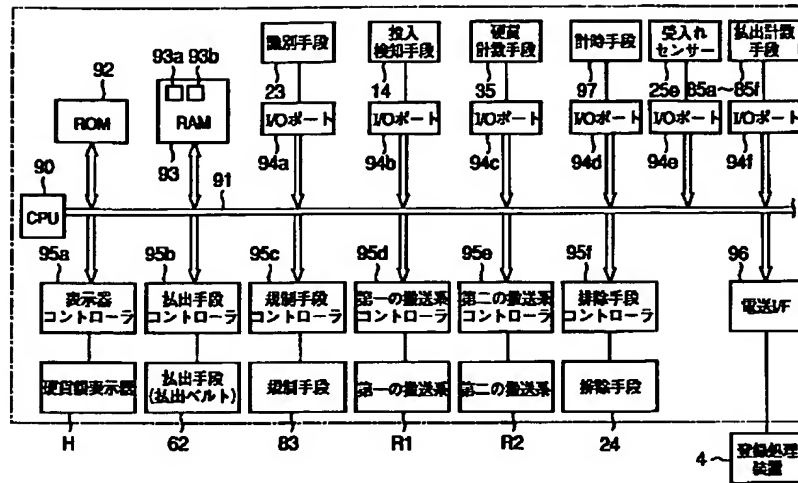|	
1	チェックアウト装置
2	支持台
3	硬貨払出機（硬貨自動払出機）
4	登録処理装置
10	硬貨投入口
11	開閉蓋
12	収容皿
20	搬送路
23	識別手段
24	排除手段
35	硬貨計数手段
40	搬送ベルト（搬送手段）
60a〜60f	硬貨収容部
90	CPU（硬貨合計額算出手段）
93a	合計額格納エリア（硬貨合計額格納手段）
93b	釣銭情報格納エリア（釣銭情報格納手段）
96	伝送I／F（合計額出力手段、釣銭情報入力手段）
100	台部（支持台の一部）
110	筐体部（支持台の一部）
K	硬貨
120	キーボード（入力手段）
220	スキャナー（光学的読取装置（入力手段））
242b	合計額エリア（買上合計額を格納する格納手段）
242d	硬貨額エリア（硬貨合計額格納手段）
242e	総預額エリア（総預額格納手段）
240	CPU（釣銭算出手段）
243	伝送I／F（釣銭情報出力手段、合計額入力手段）

【図3】
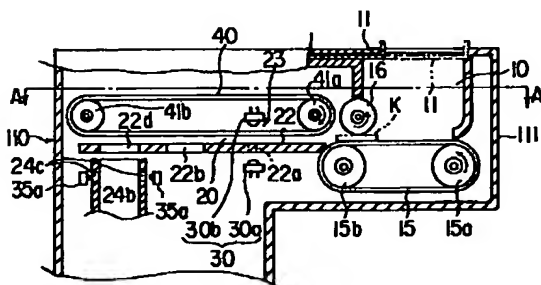
【図4】
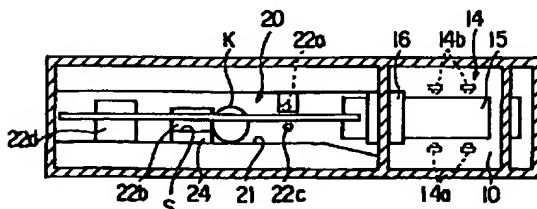
【図1】
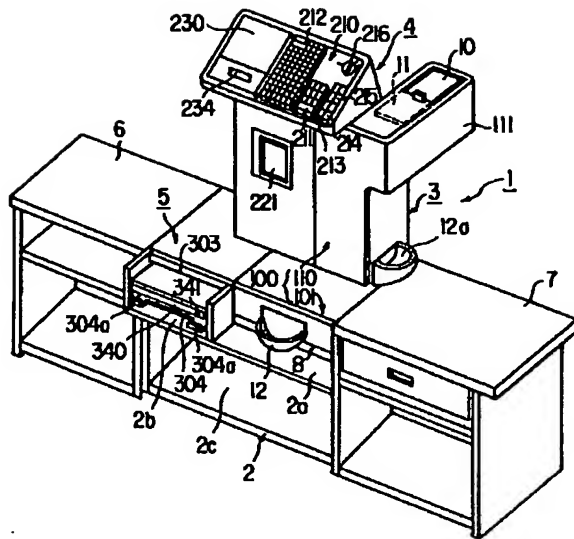
【図7】
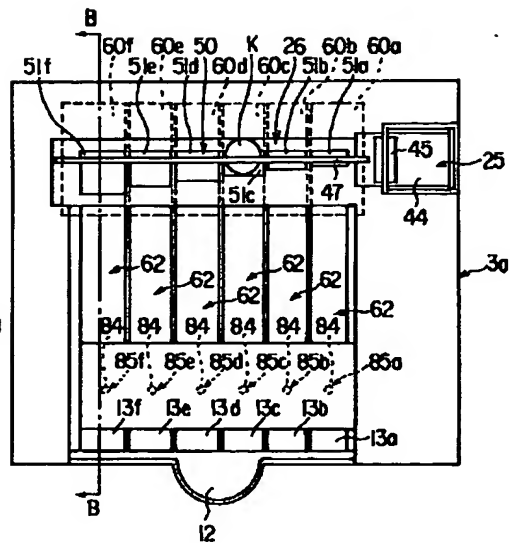
【図2】

【図12】

【図5】

【図6】

【図8】

【図11】

【図9】

【図10】

【図13】